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ART. I. *A case of Aneurism of either the Ischiatic or Gluteal Artery, in which the right internal iliac artery was successfully tied.* By VALENTINE MOTT, M. D., Professor of Operative Surgery and Pathol. Anat. in the College of Physicians and Surgeons in the city of New York.

Dear Sir:—Previous to Dr. Mott's departure hence for Europe in September last, he charged me to prepare for publication, in the journal under your superintendence, the history of his operation upon the internal iliac artery, for an aneurism of either the gluteal or ischiatic artery. The papers containing this brief report have just been handed to me, and I hasten to transmit it to you, and beg you to allow it a place in your pages. The operation of ligature of the internal iliac artery has been once before performed in this country, by Dr. S. P. White, then of Hudson, New York, and now a resident of this city, and also with success. The operation, you will observe, was achieved on the 29th December, 1834, and Dr. Mott sailed for England in the February following, and was absent for seventeen months, which will account for the length of time which has elapsed between the performance and the publication. But during this interval, after his recovery, the patient lived as a domestic in the family of the Doctor, and has only just quitted it to become coachman to a gentleman of this city, being now, nearly two years afterwards, in perfect health; a sufficient evidence of the perfect success of the operation.

With much respect, &c.

To Dr. Isaac Hays. WM. C. ROBERTS, M. D.

Case.—*History.* Richard Charlton, the patient, is a coloured man, born in this city, and about 38 years of age. He has worked in a grocery store. He first felt the symptoms of his disease in the summer season of 1832;—during the cholera then prevalent he had a diarrhœa, and while making frequent straining at stool, perceived a swelling and pulsation in the right buttock, which has gradually increased until this time. It is now about the size of a goose egg, and contained only fluid blood.

On the 29th December, 1834, at noon, I proceeded to tie the right internal iliac artery, in the presence of Drs. I. Kearney Rodgers and A. E. Hosack, and assisted by Drs. Vaché and Wilkes. The incision, which was fully five inches long, extended from a spot on a line with the umbilicus, about midway between the linea alba and the anterior superior spinous process of the ilium, to within half an inch of Poupart's ligament, and then curved forward an inch over the course of the spermatic chord. The operation lasted about 45 minutes, owing to the almost irrestrainable intractability and frantic restlessness of the patient. His great straining and jactitation caused me to make a small opening in the peritoneum, whilst separating it from the iliacus internus muscle. The peritoneum and intestines being drawn up and supported by a large curved spatula, the internal iliac artery was readily seen, crossed by the ureter, which was easily pushed aside. The filamentous tissue was quickly separated by the fingers from about the vessel, and the ligature conveyed under it by the American needle. At the moment of tightening the knot the hand was applied to the tumour, in which all pulsation immediately ceased, and which itself almost entirely disappeared directly after. The patient, being put to bed, took twenty drops of a solution of morphine, and in the evening was easy.

December 30. Had a good night's rest, and was comfortable in the morning. Some excitement coming on early in the afternoon, he was bled from the arm to about ℥xviij., and took a solution of sulph. magnes. in divided doses. *Evening*—Much easier; salts had not operated. Directed an enema, and applied a strip of blister plaster around the wound.

31*st.* Has had a good night; is doing well; is free from pain, and the pulse is tranquil; enema operated several times, and the plaster drew well. In the evening he was still better than in the morning.

January 1*st*, 1835. Feels much more easy than he did yesterday, and can move better—the abdomen is less tumid. Pulse not more frequent, but rather quicker than it was yesterday. Since the enema

was administered has had frequent teazing stools. Ordered enema ex. opio. c. amylum. Cold water and barley tea for drink.

2nd. Anodyne enema quieted the bowels. Pulse, though still frequent, soft and compressible; tension and tenderness of abdomen gone.

3d. Freedom from tenderness continues; pulse nearly natural. Reapplied the blister and allowed panada and arrow-root.

4th. Much depressed by the intense cold of to-day, (10° below 0 of Fahr.)

5th. Pulse natural; tongue nearly clean; is cheerful and hungry.

7th. No unpleasant symptom whatever.

9th. Removed the sutures from the wound, which is very much closed. Is free from pain; pulse natural and bowels regular.

The report of the case terminates here; and owing to the absence of Dr. A. E. Hosack, upon whom the case of the patient devolved, I am only enabled further to state that the ligature came away on the 42nd day.

New York, Nov. 26, 1836.

ART. II. *Case of Congenital Enlargement of the Tongue.* By THOMAS HARRIS, M. D., Surgeon of the United States' Naval Asylum, and one of the Surgeons of the Pennsylvania Hospital. (With a plate.)

R. K., aged nineteen years, a native and resident of Tennessee, consulted me in May, 1835, in relation to a congenital enlargement of his tongue. An elder brother, who accompanied him, detailed to me the following history of his case. At birth his tongue was enlarged and slightly protruded without the maxillary bones, so as materially to interfere with the process of suction. When about a month old, the tongue greatly increased in size, and so far projected from his mouth as to produce considerable deformity; but I could not learn whether or not symptoms of inflammation existed in the organ. It increased with the growth of the body until it acquired a magnitude inconvenient to the patient, and an appearance highly offensive to the sight.

When I first examined the case, the tongue projected beyond the upper incisors three inches—circumference six inches—vertical thickness one inch and a half. The tongue exhibited a violet colour; was of a hard and incompressible consistence, covered with a dark slimy

secretion, and that portion of it without the mouth was much larger in volume than that within. The weight of the tongue pressing continually on the inferior incisor and canine teeth, gave them a horizontal direction forwards; and at the same time drew the os hyoides and larynx upwards and forwards.

On examining the inferior maxilla, the rami was found much shorter than natural; half an inch at least less in length than that of his brother, who in all other respects was of the same size. The angle of the jaw was unusually obtuse, and the molar teeth were rather longer than natural. By these alterations in the conformation of the parts, the patient had so far overcome the inconvenience arising from his projecting tongue, that the molars could be readily brought in contact, and thus the process of mastication could be performed, and deglutition effected almost as well as if no deformity existed. He was obliged, it is true, to cut his food in small pieces, and introduce it at the side of his mouth.

Except during the act of eating, the saliva ran constantly from his mouth, to catch which, and to conceal the deformity, he was obliged to wear a silk handkerchief over his mouth and around his neck.

I decided to perform the operation, but as the patient was somewhat feverish, arising from his long journey and the heat of the weather, it was postponed for a week. As the inferior incisor teeth could not be restored to their natural position, I deemed it prudent to immediately extract them. In the presence of Drs. Horner, Barton, Randolph, Butler, and several medical students, the operation was performed on the 26th of May. I first elevated the tongue, and dissected it from the floor of the mouth, about three-fourths of an inch behind the anterior part of the jaw, and then introduced a strong straight bistoury, commencing where the first incision terminated, and pushed it through the organ between the median line and the left raninal artery, and drew it forward and laterally, so as to form the left flap, terminating at a point corresponding with the teeth. After the divided artery was secured by a ligature, the bistoury was again introduced in a corresponding position on the right side, by which the opposing flap was made; the artery was secured, and then the intervening space was divided by strong scissors. The cut in the tongue resembled in form the letter V inverted. In performing the operation in this manner, I had perfect command of the tongue until after the blood-vessels were tied. The flaps were now approximated, and maintained in this state by means of three interrupted sutures.

A pointed well formed tongue was thus made, and of the ordinary length. After the operation the patient complained of a burning, ex-

cruciating pain in the tongue; and this organ exhibited a tumid and livid aspect, which threatened gangrene. By abstracting a few ounces of blood from under the chin, and by the topical application of kreosote these symptoms were relieved. On the fourth day the ligatures were removed, and on the fourteenth the wound was entirely healed.

In consequence of the shortness of the rami of the jaw, and the alterations of its angles, the incisor teeth were separated an inch and a quarter, while the molars were in contact. In order to facilitate the approximation of the anterior part of the maxillary bones, several of the molar teeth were drawn out, which overcome nearly one half the separation, and at the expiration of two months, by means of pressure, the distance was reduced to less than half an inch.

This case forms another interesting example of the power of nature in accommodating parts of the body to new circumstances. Though the restoration of the jaw to its natural position, was no doubt hastened by pressure, still I believe that it would have been affected, in time, without such assistance. It is well known that spontaneous alterations take place in the angles of the jaw, in *all individuals*, at different periods of life. For example, during infancy, before the teeth make their appearance, and in after life, when from disease or old age they are lost, the angles are very obtuse; but while the dental line remains perfect, they are rectangular. So that nothing more extraordinary has occurred in the patient, whose case I have detailed, than is observed in every individual before and after shedding the teeth.

I received a letter from my patient dated August, 1836, more than a year after the operation, in which he states, that his jaws are nearly closed—all deformity is removed—that he articulates distinctly—is in excellent health and spirits, and then engaged in his studies in college.

This case is similar in all respects to that of Margaret Lawson, which I published in the year 1829 in the seventh volume of the American Journal of the Medical Sciences; except that this one was congenital, and the former commenced at four years of age.

The plate exhibits the peculiar position of the lower jaw, as well as the appearance of the patient before and after the operation.

Notwithstanding the rarity of this disease, Baron Percy, in an article in the *Dictionnaire des Sciences Médicales*, vol. xxvii. p. 244, has noticed, and collected twelve cases. In doing so, he has embraced the records of all countries, and a period of upwards of sixteen hundred years.

The first case recorded is by Galen, who flourished in the second century. He saw the case in Pergamus.

Scaliger reports a case which he examined in Agen in France in the year 1570.

Donat describes a case which he saw in Mantua.

Bartholin saw a case in Copenhagen in 1680.

John Valæus saw another in Copenhagen sometime before, which he describes as being "as large as his arm."

Bardet, Maurant, and Trioen each record one, but the writer fails to notice the period of their occurrence.

Baron Percy published two cases, one of which he saw at Petersbach, department of the lower Rhine; the other at Offenbourg.

Mirault reports a case, about which he was consulted at Huism, department of the Loire.

Sorbait and Rey have each published a case.

Of these twelve cases, four were successfully operated on by Bartholin, Verœus, Percy, and Mirault; the remaining eight were abandoned to their fate.

I am aware that there are recorded many recent cases of great enlargement of the tongue, but unaccompanied by any alteration in the configuration of the inferior maxillary bone. Lassus and others mention such cases, which they were enabled to cure by local bleeding and pressure. In the cases, however, which are above described, such remedies would be of no avail, as the monstrous tongue could not be forced into the mouth as they propose; nor could the altered angle be remedied while the huge mass was permitted to counteract the salutary efforts of nature.

Philadelphia, February, 1837.

ART. III. *An Analysis of some of the modes for effecting extension and counter-extension in Fractures of the Lower Extremities, with observations on the materials most proper for the formation of bands.* By REYNELL COATES, M. D.

There is scarcely any surgical accidents which have called forth the exercise of so much mechanical talent in the construction of machines for their treatment, as fractures of the thigh and those of the leg, when they require continued extension of the limb. Hardly a month passes unmarked by the proposition of some apparatus or modification of machinery, supposed to be novel in its character, and the claims of many of these contrivances are upheld by more or less practical experience. Two or three cases, perhaps, have been actually cured

by some one of the methods described. The limbs are alleged to be of the proper length, no ulceration or excoriation has occurred during the treatment, and the patient walks with a firm step or without any apparent lameness. It may well be asked what more can be required to substantiate the merits of any apparatus? Certainly, if we grant that due care has been exercised in the measurement of the limbs, enough is proved in the premises to show that occasional cases have terminated in a highly satisfactory manner under the plan of treatment advocated, but the weight of the evidence goes no farther. A single unsuccessful case may indisputably establish either the imperfection of the apparatus employed or of the practitioner employing it, but many observations are required to prove the general applicability of any machine.

I propose, then, to inquire into the physiological and mechanical action of certain parts of the apparatus for fractures of the lower extremities, to point out the just bearing of certain well known rules for the management of extension, as laid down by surgical writers generally who have not in all instances practised their own precepts, to separate what is absolutely essential from what is merely collaterally useful or positively injurious in the machinery, and to offer a few remarks on the best material for splints, and extending and counter-extending bands.

We will confine ourselves as strictly as possible to the single question of mechanical extension, as employed in fractures of the shafts of the bones, attended with or liable to shortening of the limbs by muscular action, for it would be impossible to discuss within reasonable limits the necessary modifications of mechanical treatment requisite in cases of fracture about the joints of the hip, knee, or ankle.

I shall dwell chiefly upon the plans of treatment with the limb in the extended position, these being almost universally employed in American practice.

Firstly; then; what is the nature of the resistance to be overcome by mechanical extension in the treatment of fractures?

If the accident be accompanied by a severe shock, and a collapse of the vital powers, there will be scarcely any displacement of the fragments other than what may result from the direct action of the fracturing force, from changes in the position of the patient, or from the weight of the member. The muscles are then passive; and if the limb, as well as the body, be laid straight on a horizontal surface, the limb will appear of the natural length, even in cases of very oblique fracture of the os femoris. If a firm, unyielding, and convenient apparatus should now be so applied as to secure the foot and the pelvis in

the right relative position, no shortening can afterwards take place, and the case may result in a perfect cure without the employment of any extending force, properly so called. I have seen this result in one instance, and the reason why it has not been more frequently observed has been, because part of the apparatus used in other cases was always composed of materials more or less extensible. But the accidents which produce fractures are but seldom so severe as to throw the patient into collapse; and, unless the case be mortal, even when this effect is witnessed, reaction often follows in a few minutes, and almost always within twenty-four or thirty-six hours. We therefore seldom see a fractured thigh of the full length before the application of the dressings; and when it is so, the advantage must be promptly seized, or the opportunity is lost. The muscles commence contracting immediately or very soon after the occurrence of the accident, and more or less shortening of the limb results; still, if within two or three hours after the injury is inflicted or the reaction established the surgeon should apply steady extension for a few minutes, so as to exhaust the muscles a little, the limb is brought to its full length at once, and all that is afterwards required is to secure it against another retraction—not by an extending, but by a simple retaining band. The force required for this purpose, under any ordinary circumstances, is precisely equal to the tonic contraction of the muscles in health, which is always very slight, and during sleep or when the mind is strongly engaged, scarcely perceptible. It is folly, then, to apply an instrument which shall continue uninterrupted and equal extension at all times, at the risk of all the inconveniences frequently resulting therefrom, after we have gained our purpose in the fullest extent, by restoring the limb to its natural length. I once met with *rather too much success* in treating a fracture of the thigh. The patient left the hospital *with the injured limb perceptibly longer than the sound one!*

Though the retentive force necessary to resist the tonic contraction of the muscles is neither uniform, constant, nor severe, yet the extending band, or any other contrivance which may be substituted for this essential part of the dressings cannot be made weak with impunity, for it is called upon to resist occasional forces of vastly greater power. The voluntary and spasmodic contractions of the muscles of the thigh, and the cramps in the gastrocnemii muscles, to which some persons are extremely liable, must not be permitted to disturb the position of the fragments if such an accident can possibly be prevented. I have seen the strong tapes of my own extending band snapped off by a spasm in a case of fractured thigh, with a threatening of tetanus.

Such severe attacks are extremely rare, and are more readily repressed by strong opiates than by any mechanical measures; but the voluntary contractions can be and should be controlled by the apparatus, or the ends of the fragments will continually irritate the surrounding parts by their irregular motions, and perhaps superadd the evil of spasmodic muscular action. This control cannot be obtained by any constant extending force, such as a spring, a weight, or an elastic band; for the continual pressure of such a force, when adequate in intensity to the purpose in view, cannot be tolerated by human integuments: hence much of the complaint urged against permanent extension by those who have witnessed severe ulcerations and sloughs produced by the bands.

In proof of the practical importance of words in surgery, it may be mentioned that the term permanent extension strictly refers only to the position of the limb, but it is apparently associated in the minds both of authors and students with the idea of a permanent extending *force! The very name of "extending band" given to an important* part of the apparatus is an error in terms, and has exerted a very prejudicial influence upon the treatment of the class of accidents under our notice. If the band in question can be used with propriety as an active agent in extending the limb at any time, it must be during the first few days of the treatment; for when the limb is once brought to its full length, any further extension would be a positive evil. The band is really *a retaining band*, and the proper extension should be made *by the hands of the surgeon.* As an additional instance of the abuse of words by surgical writers, I will allude in passing to the well known law that "extension and counter-extension should always be made *in the same direction.*" The meaning is obvious, but this is certainly a very awkward way of expressing the real intention, namely, that these forces should act *in precisely opposite directions.* But this is a digression.

When several days have elapsed before the treatment of a fracture with shortening, is commenced, the nature of the force to be overcome is changed—it is no longer the mere tonic contraction of the muscles. It is well known to every surgeon that in a luxation, when the distance between the origin and insertion of a muscle is lessened, it contracts, and in a few weeks becomes completely accustomed to its new position; it then requires an enormous force to restore the muscle to its original length. Now there is no essential difference of condition between muscles shortened in luxations and those which have remained contracted for many days in fractures, except that, in the latter, the evil never becomes unconquerable until the fragments are

so far united as to destroy all hope, and consequently all desire to attempt reduction. To conquer this permanent retraction suddenly is impossible; and therefore the law is laid down that in reducing luxations we should act slowly, gradually, and without violence. In practice we employ, for reducing a dislocation of the femur, from five minutes to an hour, or more, in our attempts, according to circumstances. If we fail in accomplishing our purpose within a reasonable time, we quietly and wisely resign the case as incurable. The same law is repeated, and much in the same words, for the management of fractures: but mark the difference in its application to practice! I have been at some pains to discover how long a time is occupied in bringing a fractured thigh to its full length by some of the first surgeons in this country—for the books give their directions on this head in a vague and indefinite manner.

I have been in the habit of bringing a fractured thigh to its full length, by acting *slowly*, *gradually*, and *without violence*, in from five minutes to twenty-four hours—once only, in a long neglected case, has there been a necessity for repeated extensions during three days. On the other hand, those whose opinions have been asked have generally named a week, or two weeks, as the required period; and one has gone so far as to lay down the general rule that the limb should be brought to the full length, at farthest, *by the end of the third week*. In this long and tedious mode of operating the muscles enjoy every opportunity of contraction, and of becoming accustomed to their new position. During the very efforts of the surgeon to produce their gradual elongation, they are still accumulating powers of resistance to oppose the last portion of extension, and great force is required to conquer the last half inch of shortening, supposing that this can be accomplished at all. What would be said of the surgeon who should propose to reduce a recent luxation, by means of a slow and gradual force which should bring the bone finally into place at the end of two or three weeks? What better plea can we find for such a mode of proceeding in cases of fracture? It is said that great danger would result from a more energetic practice, in consequence of the irritation which the lacerated muscles must experience from the passage of the rough ends of the fragments over their torn surfaces! In reply to this, let us put a parallel case. A man shall receive a deep punctured wound in a muscular part, from the broken and jagged end of a large splinter which rests in the wound—instead of extracting the splinter immediately, the surgeon shall apply to it an extending apparatus which shall draw it out by the second or third week from the date of the accident, for fear of irritating the muscles by adopting a more

rapid process! I am utterly unable to perceive any essential difference of principle in the two modes of treatment just mentioned. If the latter be ridiculous, the former is not less so! If we wish to relieve the lacerated muscles from irritation, the only rational course is to draw the fragments away as speedily as possible by moderate force, and to place them where nature designed they should be; or if the whole purpose cannot be accomplished, the nearer the approach to a correct position the less the irritation.

But it is said that in bad cases the lacerated muscle may be torn asunder or thrown into spasm by attempts at extension. If the former accident were likely to take place to any considerable extent, the case would require amputation and not a retentive apparatus. If a few fibres only, or a single small muscle were endangered, the accident would be unimportant; for a muscular fibre that would break in being drawn out to its natural length, must be in a condition that would render its temporary preservation a matter of small consequence; moreover, the objection is entirely hypothetical. No instance of such an accident from the rational employment of extension and counter-extension can be found on record. Such a plea is never urged, where the rupture *may* take place,—in old dislocations;—and in fractures, long before the muscles have become so obstinately contracted as they are in the class of accidents just mentioned, the union between the fragments becomes so firm that extension is rendered impossible, and, therefore, is never attempted. Then, as to spasm: this is much more likely to occur when the limb is shortened, than when it is of the natural length; on account of both the direct irritation of the misplaced fragments, and the irregular action of the fibres from the change in the relations between their points of origin and insertion. Again: one of the best means of conquering muscular spasms in cases of fracture, which spasms very often present the characters of cramp, is the full extension of the affected muscles aided by lateral pressure. I have repeatedly removed such attacks, simply by tightening the apparatus; and have seen them renewed again, the moment the bands were relaxed. When such measures fail, it is by attention to the condition of the small intestines,—an irritation of which seems to be a fertile cause of cramps in the extremities,—and by a judicious use of opiates, that we are most certainly enabled to relieve them.

This favourite doctrine, that many days should be occupied in bringing the limb to a proper length, is a very frequent cause of ulceration and sloughing, and explains much of the opprobrium cast upon the treatment with the limb in an extended position. But the evils resulting from this plan of treatment are rendered doubly severe, by

the universal practice of employing the extending band as an active, instead of a passive instrument. The surgeon seizes the tapes, or turns the screw or axle to which the tapes are attached, and proceeds to draw forcibly on the band until the limb yields to the traction. Now, though a vast variety of modifications have been introduced in the construction of extending bands, they are all constructed upon nearly similar principles, and the surfaces necessarily covered by them present but four chief points of support to this part of the apparatus, namely: the front of the instep, the tendo achilles, and the upper parts of the two malleoli. The two first, generally, enduring a much greater portion of the pressure than the two last.

We may enlarge the band to any extent under the form of a gaiter, which may even enclose the whole leg, if the case be a fracture of the thigh; yet, any regular machinist would at once declare that scarce any advantage is gained by this arrangement; and such a person would be a perfectly competent judge, for the problem is an abstract mechanical one, in which no physiological question becomes involved. Human hands apply themselves with much more precision, and act at much greater mechanical advantage in effecting extension, than the most ingeniously constructed band. Why then employ the latter for any other than its legitimate purpose—retention? The mode of treatment under censure, subjects the parts not only to the pressure required to resist retraction, but, also, to that much more formidable force which is necessary to conquer the habitual contraction of the muscles, when the accident has been neglected for some days. By this means the integuments are always irritated and often contused. What wonder then that sloughs or excoriations should follow! But this is not all. The pain occasioned by the traction of the bands induces loud complaint on the part of the patient, and the surgeon relaxes the tapes to give him temporary relief; the limb immediately commences to contract; in a little time it is found shortened and the bands are tightened again. Thus the parts are subjected to continual alternations of pressure and relaxation, and the same difficulties have to be overcome, again and again, under disadvantages continually increasing. This is a sad picture, but it is drawn from life. Now parts that will bear very considerable pressure when that pressure is constant and uniform, will ulcerate under slighter forces irregularly applied; and the reason of this is obvious. While the pressure continues, the vessels of the part are emptied mechanically; absorption is increased, and nutrition diminished in rapidity—the part is attenuated, and the vessels are at the same time debilitated. Remove the pressure, and instantly the vessels are rendered turgid, the balance

of the circulation is destroyed, and additional irritation is produced. A few such alternations, and inflammation becomes established, or the part is debilitated beyond the power of reaction. Excoriation or sloughing is then the inevitable consequence. If the extending band be made of yielding materials, the apparatus *relaxes itself without the assistance of the surgeon*, who is compelled to tighten it from time to time, and thus unconsciously effects the dreaded result just mentioned. To increase the difficulty still further, it is customary with some very eminent surgeons to introduce a slip of buckskin, spread with adhesive plaster, between the counter-extending band and the perinæum. This plaster has a powerful tendency to produce irritation of the skin. When erysipelas is prevalent, it sometimes proves dangerous even in the treatment of incised wounds, though it is generally removed in such cases at a comparatively early period. When worn for a long time, it sometimes detaches the cuticle, leaving the surface of the true skin in a condition resembling mucous membrane, and difficult to heal; sometimes it blisters, and sometimes produces a pustular eruption. I never saw it used to moderate the pressure of a splint or bandage, without producing excoriation, ulceration, or sloughing.

One word more on the manner of effecting the extension. In all cases treated in the straight position, we employ both an extending and a counter-extending band, or something equivalent thereto. In order to act in accordance with the principles and reasoning contained in the foregoing pages, the apparatus, being applied with the band or other contrivance for counter-extension secured on the perinæum, and the tapes of the extending bands relaxed, the surgeon grasps the foot and ankle with both hands, placing his thigh against that splint by which the counter-extension is effected. He then steadily but firmly draws downward the inferior portion of the member, pressing the end of the splint upward at the same time, until the member resumes, if possible, its natural length, and nearly its natural figure. The tapes of the extending band are now drawn sufficiently tight to cause the band to apply itself accurately to the surface of the limb, and they are then securely tied. The time occupied in the extension varies with the obstinacy of the retraction, and in old cases, five or six minutes may be required for this purpose. When this part of the dressing is completed, the surgeon proceeds to ascertain by actual measurement, whether there still remains any deficiency in the length of the member; and it is well to notice here a few highly important precautions which should always be observed at this stage of the business.

No measurement can be depended upon, unless it extend from the

superior anterior process of the os ilium, to the lowest point of the malleolus internus or externus, these points being definite and constant. It has been customary with many, to measure from the first named spot, to the lower edge of the patella, or to the tuberosity of the tibia; but neither of these positions can be defined with even tolerable accuracy, for the patella lies embedded in ligamentous matter which obscures its outline, and it would be almost as easy to ascertain by the touch, two corresponding points on the surface of two different spheres, as it would be to determine two similar points on the large rounded surfaces of bone which receive the attachments of the ligaments of the patella. I was once called, somewhat triumphantly, by a gentleman of considerable standing in the profession, to receive ocular demonstration of the complete reduction of a fractured thigh, by an apparatus which, upon mechanical principles, may be pronounced incapable of effecting such a result. On throwing down the bedclothes, a slight fulness of the front of the thigh convinced me that the limb was shortened. The surgeon proceeded to measure both thighs from the spine of the ilium to the patella, and, demonstrated to his entire satisfaction, that they were both precisely of the same length. As a difference of opinion on this point still existed, the limb was remeasured in the manner prescribed above, when the surgeon confessed to a shortening of *three quarters of an inch*, and directed the apparatus to be changed.

In order to arrive at a dependable result, it is necessary that the tape, or other material, employed in measuring, should be drawn with equal stress when applied to each of the limbs, as it is impossible to obtain for the purpose any flexible tissue which will not stretch a little, and thus cause deception, if carelessly employed.

Before entering upon the next division of the subject, it will be best to recapitulate the positions assumable, if the strictures contained in the foregoing pages be correct. They are as follows:—

1st. Extension should always be made by the hands of the surgeon.

2nd. Bands or other extending or counter-extending apparatus should be made of the most inextensible material, and should be used only for the purpose of retention.

3d. The bands should never be relaxed during the treatment, except under urgent necessity, and the moment when the surgeon wishes to effect additional extension should be chosen for any necessary inspection of the surfaces subjected to pressure.

4th. If the patient be in a state of collapse, and if the limb when laid in the apparatus, be found of the natural length, no extension is required.

The extending band is simply tightened sufficiently to adapt it properly and securely to the limb. But if shortening has taken place, the foot should be slowly, steadily, and gently brought down as far as possible before the tapes are tied, and if a single operation does not suffice, the extension should be repeated every few hours until the limb acquires the requisite length. Twenty-four hours are sufficient for obtaining all the advantage that can be gained in hospital practice; but as physicians in private practice, especially in the country, cannot see their patients so frequently as the resident surgeons of hospitals, forty-eight hours may be required in some cases for the completion of the extension.

5th. The obstacle to the reduction of the fracture growing out of the contraction of the muscles, is never entirely unconquerable; but the chief cause of difficulty from this source, in neglected or ill treated cases, is the habitual adaptation of the muscles to a shortened condition.

6th. The commencement of union between the fragments—often obvious by the end of the second week—does form a barrier to the proper extension of the limb, and that barrier soon becomes insurmountable. Hence, if the surgeon should attempt to delay the completion of the extension until the end of the third week, he would generally find his later efforts useless, and his patient incurably lame.

7th. The causes of frequent excoriation, ulceration or sloughing, during the treatment of fractures of the thigh with the limb in a horizontal position are, chiefly, the employment of improper materials for bands, irregularity in the management of the forces, or improper tardiness in extending the limb. These unfortunate results are by no means chargeable upon the position of the member or the amount of force required to prevent retraction.

With these aphorisms the subject of extension is dismissed for the present, and we may proceed to inquire what measures are required to counteract the deformity which in fractures of the lower extremities often takes place in other directions than that of the axis of the bone. And let it be remembered that fractures in the neighbourhood of the joints are excluded from all notice in this paper—to the treatment of such, many of my remarks would be wholly inapplicable.

There is in all fractures of the leg and thigh a strong tendency to rotation of the lower fragment, which is produced by the weight of the anterior part of the foot. The displacement takes place outwardly or inwardly, according to the position of the plane on which the heel rests. In every apparatus provided with lateral splints this tendency is readily checked by casting a turn of roller round the toes and

securing the ends to one or the other splint, as circumstances require; but this simple plan of proceeding is not satisfactory to many, and a fondness for over legislation has caused the introduction of foot-boards, which often display the exercise of considerable mechanical ingenuity, being so contrived as to be capable of great variation of position; but fortunately very little variation of the direction of the foot is necessary in treating fractures, and that little can be much more certainly and perfectly effected by address in managing the extending tapes. The attitude of repose is the one in which the whole member should be secured, and that attitude requires the foot to be placed in a state of demi-flexion, semi-adduction, and slight rotation outward;—the position of sleep. This cannot be imitated by a foot-board without great expense and very complex machinery, which at last would be much less successful than the just regulation of the direction and amount of force applied by means of two extending tapes, tied in a single knot beneath the foot, and aided by the piece of roller round the toes. By changing the position of the knot the degree of abduction is determined at will, and by loosening or tightening the roller the foot is extended or flexed to any degree at the same time that the toes are allowed to rotate only so far as is considered desirable.

But ninety-nine out of a hundred foot-boards are made nearly perpendicular to the axis of the limb, compelling the foot into the position which it assumes when the patient stands in an erect position. This relaxes the fibulo-tarsal ligaments and the abductor muscles of the leg, while it obliges the deltoid ligament and the adductors to bear nearly the whole extending force and the reaction of the bands, which, slight as they are when rightly managed, often occasion pain below the internal malleolus, and increase the danger of stiffness in the ankle from the long confinement of the limb. For these reasons I esteem the introduction of any foot-boards whatever in the apparatus for fractures of the lower extremities as an evil; and if these be discarded, we reap the additional advantage of lessening the almost resistless propensities of inventors toward the employment of screws, wheels and axles, springs, pullies, weights, &c., as means of extension. Fortunately nearly all possible modifications of these contrivances have now been offered to the public, and assuredly it would be no ordinary proof of genius to bring forward a real novelty in this part of the apparatus, however indefensible it might prove in practice. It is distressing to think that, through the evil consequences growing out of the complexity and malappropriation of the parts of the apparatus, the treatment in the extended position is going out of fashion in the land of its birth; but the French have never imitated,—perhaps

they have never heard of, the beautiful simplifications of their own instruments effected by American surgeons, and especially by those of the Philadelphia school. Had they tried them, it is hardly possible that they could have ever relapsed into the use of the double flexed position!

It is now time to speak of the nature of the forces which produce displacements in an angular or lateral direction, so far as they are connected with our present purpose.

Whatever displacement may have resulted from the fracturing force in the first instance, or from the subsequent action of the muscles, so soon as the limb is brought as nearly as possible to its proper length and the foot placed in its natural position, there remains very little tendency to lateral or angular displacement, except from the weight of the limb when the part where the fracture exists is ill supported.

If both bones of the leg be broken, the broad surfaces of the tibial extremities generally afford each other too much support to allow either to sink passively beneath its just level, and the muscles of the calf are by no means inefficient splints. But great care is sometimes necessary in regulating the position of the heel. The most common deformity that I have seen after fractures in the middle of the leg, has been a slight angular displacement backward, from too great an elevation of the heel during treatment. Extension is very rarely necessary in these cases, but some persons are fond of a foot-board even in fractures without shortening. I have never seen one used throughout the case without producing more or less angular deformity. The degree of support to be given beneath to all parts of the limb is best obtained by a pillow or graduated compress; or, when no extension is employed, the intervals between a soft pillow and the limb may be filled with bran, according to the plan employed by Dr. John Rhea Barton in compound fractures.

In fractures of the thigh, from muscular actions too well understood to need analysis here, there is generally some tendency to displacement outward and a little forward at the lower end of the superior fragment, and a similar tendency inward and a little backward at the upper extremity of the lower fragment. This tendency is obvious enough while the limb is shortened, but becomes almost a nullity when it is fully extended; for then all the muscular fibres being able to exert their tonic contraction pretty equably on all sides, preserve the stasis of the fragments much more perfectly than when relaxed by overlapping.

To hold in check this disposition to lateral deformity, it is proper

to have two lateral splints of some kind to press upon the sides of the limb, through the medium of some chaff or bran sewed in a narrow muslin bag; but these are by no means absolutely necessary. Three handkerchiefs, two belaying pins, some buckskin, blankets, a sea-chest, nails, an auger, and a hatchet, will enable a marine surgeon to treat a fractured thigh with tolerable success, if his patient be hardy and in good health. I have seen a most perfect cure that had been effected by a sea captain who had walked the wards of a hospital a few times, and whose apparatus was still simpler. His sail duck counter-extending band was nailed near the head of a birth, and his extension was made by means of a strip of the same material, secured in the same manner to the foot of the birth, and tightened as occasion required. It would certainly be inconvenient, but by no means difficult, to treat a case on a common mattrass, with no other mechanical aids than the bands and the bedstead. Still the splints are not only convenient, as furnishing the best possible attachments for the bands, but they are important in checking, in a slight degree, any disposition to lateral deformity, and in protecting the limb from accidental disturbance.

Much debate formerly took place as to the relative merits of short and long splints in these fractures. The former are now chiefly employed by the advocates of the double inclined plane of White, or by the few remaining disciples of Pott. Both these plans of treatment are foreign to our present investigation, and the short splints are only mentioned as accessory parts in the apparatus of Boyer and Dessault, with their American modifications. In Doctor Hartshorne's modification, as it is called, of the former, which in fact differs more widely from the original than that does from the apparatus of Dessault, the short splints are entirely dispensed with; but in Doctor Physick's modification of the latter, one posterior and one anterior short splint of pasteboard are described. The only necessity for these grows out of the employment of tapes in securing the splints. These tapes may cut the thigh or irritate it by their pressure, if permitted to bear directly on the limb; but by replacing them with broad pieces of roller this difficulty is obviated, and the apparatus is simplified by the abstraction of two inconvenient parts.

If, as sometimes happens when the fracture takes place below the middle of the bone, the ham or lower part of the os femoris requires support from beneath, this is better accomplished by means of a graduated compress laid on the mattrass than by any splint. A carved splint exactly fitting the patient might indeed answer a good purpose, but it is extremely difficult to find such a one; and even if

found and applied properly in the first instance, it would cease to fit the patient in many instances before the commencement of union, in consequence of the gradual attenuation of the limb from confinement and pressure:—the false dependence placed upon it would then become a serious evil to the patient.

Let us pass to the consideration of the roller or bandage of strips applied directly to the limb, as recommended in the descriptions of all the apparatus except Hartshorne's modification of Boyer. The roller is exceedingly objectionable, even when continued no higher than the knee; for all such applications require occasional changes, and he is an able bandager who can make a roller of six yards retain its place more than ten days without becoming creased or unequal in pressure, so as to prove a source of either irritation or embarrassed circulation. If a change be required, it can only be accomplished by removing the apparatus and raising the limb—to the great disturbance of the fragments—it may be, at a most critical moment. If, then, any bandage be employed, it should be a bandage of strips, but it is only in a few cases of exception that a bandage is required.

When there are present such complications as extensive ecchymoses, unusual depositions of new bone, or œdematous swellings, demanding pressure to simulate the process of absorption and to diminish that of deposition, the bandage of strips may prove highly serviceable; but among more than fifty cases it has been found necessary in only two. It may be laid down, then, as a general rule that, in fractures of the thigh, the application of bandages directly to the limb is very rarely necessary.

It is a rule admitting of no dispute, (for it is founded upon mathematical principles,) that extension and counter-extension should be effected as nearly in opposite directions as the physiological peculiarities of the parts interested will permit. The modes of fulfilling this law, as practiced by American surgeons, are very superior to those employed abroad, if we judge exclusively from published records. They may be resolved into two. In the first, the counter-extension is made by means of a pad attached to the inner splint, and the extension is made by passing the tapes of the extending band through holes made in the centre of a cross piece, connecting the two splints below the foot, the splints being consolidated by cross pieces passing from one to the other. The obliquity between the two lines of direction is exceedingly slight in this apparatus, nor is it possible to diminish it further, unless at the expense of serious evils. In the second mode, the counter-extending band passes round the perineum and is secured very near the upper extremity of the outer splint, which reaches to

the axilla. The extending band passes over a notch in a block appended perpendicularly to the outer splint below the foot, the bottom of the notch being intended to correspond with the middle of the sole of the foot. The obliquity of the counter-extension in this apparatus is considerably greater than in that previously noticed; but the extension is effected in a manner equally advantageous.

The first of these apparatus is Hartshorne's modification of Boyer, the second, Physick's modification of Dessault.

It is evident that if we cast aside all physiological considerations, the former has the advantage in the directness of the opposing forces, but if the nature of the surfaces pressed on be taken into account, I think the claims of the latter in all ordinary cases will be found superior.

In Dr. Hartshorne's apparatus, the counter-extension bears almost exclusively upon the integuments covering the body of the pubic bone, between the penis and the scrotum on the one hand, and the muscles of the thigh on the other. These integuments are very intolerant of pressure, and the surface acted upon is very small. In Dr. Physick's, on the contrary, a very considerable part of this force acts upon the skin over the tuberosity of the ischium, and this will bear much greater impressions with impunity. The question is, will this distribution of the force more than compensate us for the loss of power growing out of the greater obliquity of the band?

Both theoretical reasoning and practical comparisons induce me to answer in the affirmative. The facility with which a sliding piece can be adapted to either of Dr. Hartshorne's splints, without disturbing the extension, (for there is no junct-cloth in this apparatus,) enables us to lay bare any portion of the limb, and to apply dressings with facility in certain cases of compound fracture, giving this contrivance a considerable advantage over Dr. Physick's modification in such cases, but in all simple fractures the latter is preferable. I have never seen sloughing, and very rarely excoriation, about the tuberosity of the ischium, from the use of a counter-extending band; and when abrasion has happened in that situation, it has been the result of defective stitching or creasing in the band: immediately beneath the body of the pubis, excoriation has occurred occasionally. But when the counter-extension has been made by means of a pad on the upper end of the inner splint, not only has more or less excoriation taken place in almost every instance, but deep sloughing supervened in two cases; a result which I have never seen in the same situation under the action of any other apparatus. It is right to mention, however, that in both these cases adhesive plaster spread on buckskin was used to prevent

the very evils it accelerated. In conversation with a particular friend, who was lauding our superior success in amputations, compared with that obtained in French hospitals, (a success, I am sorry to say, less conspicuous of late than formerly,) and which my friend attributed to our skill in closing and protecting the stumps, a Parisian surgeon remarked that a little "*betisse de pansement*," could not possibly produce such wide differences of results! But any one who has watched with care the practice of numerous operators, must have perceived that a little impropriety in the dressings in the treatment of fractures, is often more important than even a considerable mechanical defect in the apparatus employed. I have treated with entire success, that is, without appreciable deformity, several cases of fractured thigh complicated with wounds that rendered Dr. Physick's apparatus inconvenient, by means of Dr. H.'s first modification, adding a slide to one splint; but more extensive observations on the practice of others, who employ this apparatus in simple fractures, convinces me that it is much more likely to occasion ulceration in the perineum, and hence, that the physiological objections to its *general use*, outweigh its mechanical advantages.

In the modification of Dr. Physick, an attempt was made to effect part of the counter-extension by means of a crutch-like appendage to the outer splint, but the axilla was found too little tolerant of pressure, and far too moveable and compressible to admit of any action of this kind, and this appendage serving no other useful purpose, has been since given up by its author, and is seldom seen in practice.

The original contrivances of Dessault and Boyer, together with their modifications, as described in books, are provided with a broad belt binding the outer splint to the body, and it was against this part of the machinery that Mr. John Bell formerly launched the thunder of his heaviest anathemas. It answers no good purpose in either of the modifications, for the exact parallelism of the outer splint with the body is unimportant, and may be allowed to depend on the will of the patient. This band is now scarcely ever employed in actual practice, and should not appear in the figures in the treatises.

Having now completed most of our intended strictures upon the apparatus which are the principal subject of this paper, giving preference, in cases of simple fracture, to that of Dr. Physick, it is time to describe the mode of applying this dressing in its simplified state, as practiced in the Pennsylvania Hospital, for many years, with the most remarkable success.

The patient generally arrives at the institution on a hand-barrow, or on a settee, and dressed. The surgeon should always personally

inspect the removal of the lower clothing, *taking charge of the injured limb himself* during the process. A slight examination or a coup d'œuil having determined the existence of a fracture of the shaft of the femur, or of both bones of the leg with shortening of the member, (for permanent extension is not employed in the fractures of the leg unattended with shortening) he proceeds to prepare the bed, which is a mattrass. He first lays down transversely three broad pieces of roller, each nearly a yard in length, and so placed that when the patient takes his intended position, one of them may correspond with the middle of the thigh, another with the parts just above the condyles, and the third, with those below the belly of the gastrocnemii muscles. Over these is laid a junct-cloth a yard or more in length, and wide enough to reach from within an inch of the malleoli to the upper third of the thigh—a little above the junct-cloth we lay the counter-extending band, with its centre a few inches inward from the middle of the cloth, and its extremities stretched out diagonally from one head-post of the bed toward the opposite foot-post. The bed is now ready for the removal of the patient, which should be done in the following manner:

Two assistants, previously informed of the manner of acting, and the purpose in view, are placed facing each other, one on each side of the patient. A third stands by the side of the knee on the uninjured side, facing the surgeon, who takes a similar position by the fractured limb. The two upper assistants are now directed to insert, slowly, and gently, each a hand beneath the buttocks of the patient, where they interlock their fingers. They then pass their other hands beneath the axilla, interlocking in like manner on the spine, raising the shoulders of the patient a little. They then wait the word of command. The surgeon now places one hand beneath the middle of the leg, and the other beneath the seat of fracture, if the thigh be broken; but if it be the leg, the first hand grasps the ankle, and the second is placed beneath the ham. The third assistant with the sound limb follows the movements of the surgeon. The word is now given, and the aids all raise the patient simultaneously, conveying him to the foot of the bed, and moving on opposite sides, lift him to the desired position, where he is gently laid down. These may seem like unnecessarily minute details, but the observer has had his nerves too often racked by the awkward handling of unfortunate wretches by unpractised hands not to feel convinced of their importance. Such details are precisely what practitioners who see but little of surgery most require.

The surgeon then lays the fractured limb straight along the middle

line of the junct-cloth and applies the extending band. He next disengages the lower end of the counter-extending band, reverts it, and adjusts it to the perineum; leaving the ends of the tapes on the shoulder of the injured side, and drawing out that portion of the junct-cloth which lies under the uninjured limb, he throws it across the bed, in front of the leg and thigh of the sound side.

The next step is the adjustment of the internal splint; for if the surgeon commences with the outer one, he will find it very difficult to succeed with neatness. This splint is to be rolled in the junct-cloth in such a manner as to lie parallel to the general obliquity of the limb, just touching the surface at the upper part of the thigh and at the side of the calf of the leg, if the subject be muscular; but if attenuated, the contact will take place only at the internal condyle of the femur. This being effected, the inner chaff bag is placed upon the splint, laid over so as to rest on the sound thigh, and the chaff is driven along by the hands so as to leave a thin stratum only at the points of contact, and enough in other places to correspond with the depressions of the limb. This bag, like the splint, stops a little short of the ankle, which should always be left unembarrassed to facilitate admeasurement.

The long external splint is next enveloped, and the chaff bag adjusted in the same manner, the splint being reclined, the while, horizontally upon the bed. This chaff bag also should stop short of the ankle. The tapes of the counter-extending band are now passed through the auger holes at the upper extremity of the splint, and both splints being turned to the limb, where they are held by an assistant for the moment, the tapes are moderately tightened, until the junct-cloth is thrown into slight waves by the descent of the outer splint. The tapes are then tied in a double bow-knot.

The surgeon now passes to the foot of the bed, places his knee against the extremity of the outer splint, and proceeds to make extension in the manner prescribed in the earlier part of this paper, until he has either brought the limb to the full length, or, if that cannot be accomplished, until he has gained all that he thinks adviseable at a first effort. While the extension is continued, the assistant is directed to tighten and tie firmly the tapes of the extending band, and the surgeon then removes his hands from the ankle. He measures the limb, the splints are then turned up, and the three pieces of roller successively tied; which process completes the dressing.

If the limb be not drawn to its full length at first, the extension should be repeated at intervals of an hour, if possible, until this object is effected; and great care should be taken to lose nothing

that is once gained during the treatment. If pain from the pressure of the bands be made a subject of complaint with the patient, it will generally pass off in a few hours, or yield to refrigerant medicines or an opiate, according to the degree of fever that may attend the accident.

Whenever extension is renewed, the three pieces of roller should be thrown loose, but no farther alteration is required except the tightening of the extending band by the assistant while the surgeon effects the extension with his hands.

It will be perceived that this apparatus is vastly simplified beyond the original dressings of Dessault, and not inconsiderably beyond the modification of Dr. Physick as described in books—but it contains all the parts necessary for the treatment of nineteen cases out of twenty, and is attended with a degree of success in simple fractures which leaves little to be desired, provided the materials employed be rightly chosen. It is said that the straight position is going out of date in France, and it is known to have made, as yet, but few converts in England, where a somewhat unreasonable adhesion to ancient or national custom has been a national characteristic, which explains the prejudicial influence over the treatment of fractures exerted by the authority of that truly great surgeon Percival Pott. The less explicable rejection of this method by the French will not appear surprising, when it is considered that, by simple resolution, the force necessarily employed in extension and counter-extension, waving all question of friction, is nearly four times as great in the contrivances of Dessault and Boyer, as in those of Physick and Hartshorne! There may have been more perfect apparatus contrived in that country, to act on the same principle—but none such has come to my knowledge—and even if vague reports of the success and mode of treatment, on this side the Atlantic, should have reached Parisian ears, the little details upon which that success depends must have been generally sought in vain—certainly they are not to be found in books.—Our younger brethren who annually fly from the *green-box* to Paris, visit that great metropolis of science, to receive and not to communicate information; few indeed have visited Europe who are *au fait* upon even one specialty that has received particular attention here; till recently we have not been a publishing people; how ridiculous then is that excessive vanity which induces us to grumble at the neglect of our claims in foreign nations. In the surgical department we have done enough for glory, but what boots it if we do not propagate the knowledge of our labours! Our very improvements die in our own land, and are, from time to time, resuscitated as novelties for want of

records—measures condemned by their own authors still haunt the day, claiming the name of the very parents by whom they have been disowned! An instance of the latter kind is in point.

Dr. Hutchinson, who added the terminal notched block to the long splint of Dr. Physick, and thus diminished by at least one-half the pressure of the extending band, contrived, some third of a century since, two splints for fractures of the leg with shortening of the limb. They reached no higher than the knee, and the counter-extension was made by means of four tapes, secured, two on each side of the leg, by several circular turns of a roller just below the knee, and tied, through gimlet holes, to the splints. The stress upon these turns embarrassed the venous circulation; serious dangers resulted, as might have been expected, and the apparatus was soon relinquished by its inventor. But even to this day we hear of it, and meet with it occasionally under the title of Hutchinson's splints—and to cap the climax, it is sometimes used by country practitioners, tapes, roller and all, in transverse fractures without shortening; the tapes being employed simply to keep the splints together! I aim this blow in passing, because this contrivance is really one of the worst in the whole range of the materia chirurgica, as must be obvious to any one who will examine it dispassionately! If extension be required in a fracture of the leg, (which is very seldom the case,) it cannot be accomplished properly in any other way than by the apparatus for the thigh.

Before concluding our remarks, it is necessary to consider what materials and forms are most proper for the extending and counter-extending bands. I shall not stop to analyze the defects of the various gaiters, shoes, socks, straps, with or without buckles, &c., &c., which have been recommended by various surgeons. My object is to proceed from principles and facts which will receive general assent, to the description of the simplest contrivances that I have been able to discover, for fulfilling the indications in a manner consistent with those principles and facts. The results are not theoretical only, but each of the bands has been employed in many cases and its effects compared with those in general use.

The following important points should never be neglected in the selection of materials for bands. They should be inextensible, or they will permit of a gradual retraction of the limb, and an undue irritation of the neighbouring parts by the jagged ends of the fragments. They should be flexible, in order that they may adapt themselves perfectly to the parts on which they press; soft, that they may not irritate the skin; porous, that they may not check the insensible perspiration; for such an arrest for any length of time, invariably renders

the surface tender; and they should be cool, that they may not unduly promote the sensible perspiration, which is quite as injurious in its action when long continued. All these requisites cannot well be fulfilled by any one tissue or substance; and the bands therefore require to be composed of two or more.

There are also two things to be considered in placing the extending band. It should not cover the malleoli, or it will confuse the measurement of the limb, which is a very serious inconvenience; and it should be so arranged as to exert its principal stress upon those parts on which the cuticle is rendered thick and callous by pressure; namely, the back of the heel, and the top of the instep.

To fulfil the requisites with regard to the material, the best extemporaneous contrivance for an extending band is a choppa handkerchief folded diagonally. But even silk, though the mildest of tissues, is somewhat irritating to the skin, and the threads and creases of so irregular a mass, produce, in a few days, some inequalities and redness of the parts pressed upon, which pave the way for excoriation. These inconveniences may be remedied by passing a strip of buckskin beneath the handkerchief. But another difficulty, not to be entirely conquered, is offered by the bulk of the band, which renders the knot uncertain and difficult to manage.

There are two modes of applying the handkerchief. The first, in common use, and known to every one, is that in which the centre of the handkerchief is applied over the tendo achilles, the ends brought round above the malleoli to the front of the leg, crossed upon the top of the instep, made to descend on the opposite sides of the tarsus, tied in a single knot a few inches beneath the sole, and then passed over the block to be secured to the splint. The principal objections to this measure are these: it keeps the foot in a constant and painful state of extension, and has a tendency to draw the heel backward, so as to increase its friction on the bed, or compresses, and perhaps occasions an angular deformity, if the fracture be one of the leg. Moreover, the middle of the handkerchief presses on parts that become thinned and irritated by pressure, not being designed by nature to receive such impressions. If we attempt to remove these objections by supporting the toes in a loup of roller pinned high up on the inner splint, we employ the foot as a lever of the third order, and must exert nearly one-third more extending force to accomplish a given effect than would be necessary if the band acted directly in the axis of the limb. The whole power is also borne by the crossing on the instep without any material diminution of the pressure on the tendo-achilles, where the band acts nearly at right angles to the direction of force.

The second mode of application is much more philosophical, when viewed merely in a mechanical light. It was first communicated to me in 1824, by Dr. John Rhea Barton, though whether original with himself or derived from the traditionary and inedited legends of the Pennsylvania Hospital practice, I know not. If the latter be the case, he deserves at least the credit of reviving it, for during and since my house surgeoncy, which terminated in 1823, I believe it has not been employed in that Institution. The following description of this mode of application will convey a clear idea to the reader without the aid of a figure, and the application itself will at once convince him of the mechanical excellence of the plan.

Fold the handkerchief diagonally again and again, by inverting it from both corners equally toward the middle line, until it is about two inches, or two and a half wide. Place it behind the top of the heel, leaving two-thirds of its length free toward the sound limb, and one-third on the outside of the fractured limb; now seize both tails of the handkerchief, and bring the outer or shorter one loosely round *below* the external malleolus, and over the instep to the internal malleolus. Bring forward the inner or longer tail, and pass it above the shorter one; then cause the long tail to take a turn round the short one, causing it to pass successively without, below, within, and over the short tail, so as to form a single knot; adjust this knot a little below the internal malleolus, and then draw the end of the short tail perpendicularly downward. Carry the remainder of the long tail transversely under the sole of the foot, nearly to the external malleolus; there pass it upward between the foot and the first turn of the handkerchief at that spot, and reverting it outward over that turn, draw it, also, perpendicularly downward. Now make a single knot in the remaining ends of the handkerchief, a few inches beneath the sole of the foot, and the extending band is complete. When secured to the splint this contrivance presents one oblique turn passing over the instep, and another over the top of the heel. The lateral knots are drawn down to the level of the sole of the foot, and do not press on any part of it. The two malleoli are left naked, and no part of the leg is touched by the bandage. Nearly all the pressure is exerted on the two points best fitted to endure it, which share it equally between them, and the direction of force corresponds precisely with that of the limb. A little adjustment of the lateral knots gives any required degree of extension or flexion to the foot, and a similar arrangement of the lowest knot accomplishes any desirable amount of abduction. Mechanically, this band is nearly perfect; the only physiological objections, other than those urged against all kinds of fabric, are more specious than valid. The tension is borne entirely by the parts sup-

porting the ankle joint; but a truly philosophical analysis of all the extending bands in use, will show that nearly all their effective power really acts in a similar manner, and the little gained in some of the *gaiters*, by their constriction of the leg above the projecting malleoli, is far more than compensated by an embarrassed venous circulation, a great difficulty of admeasurement, and a necessity for the employment of extensible materials in making them. The difficulty resulting from the pressure of threads and creases is not so easily obviated in this mode of application, as it is in that formerly described; for it is not easy to retain a piece of buckskin between the handkerchief and the heel, and the application of adhesive plaster is out of the question, for reasons already pointed out. I have never employed bands on this principle, except in fractures of the leg near to or involving the ankle joint, and requiring permanent extension. In such cases, the plan of treatment is of inestimable value.

The handkerchiefs make the most convenient extemporaneous extending bands; but in hospitals, and more deliberate practice, we may still refine a little upon them. Buckskin is one of the very blandest applications to the skin, and Holland linen is the least extensible of our ordinary cloths. The two combined appear to me to furnish the best material for the most perfect extending bands. The following arrangement, modelled after the first form of the handkerchief, I have used in certainly not less than thirty cases, without a single instance of excoriation.

A piece of brown Hollands, slightly biassed, but leaving the central threads continuous throughout—from fifteen to eighteen inches in length, if designed for an adult—two inches wide in the middle, and narrowing from each side—rapidly at first, and then slowly—toward the extremities, which are an inch in width—is lined throughout nearly its whole length with thick buckskin, a very little wider than the linen; the latter being simply basted to the former, by stitches which are made to dip but half way through the skin. Two pieces of tape, each an inch in width, are sewed securely to the ends of the linen bands in the last two or three inches of their length.

This band is applied precisely after the manner of the handkerchief when used according to the first method. It presents an unbroken surface of buckskin to the skin, and is almost perfectly inextensible, the slight bias and curvature of the edges merely preventing them from cutting sharply on the tendo-achilles. Since the House Surgeoncy of Dr. Kirkbride, this band has been revived in Hospital practice, where I believe it continues to claim a preference over the other means of extension. I have, indeed, seen it produce excoriation of the instep in one instance in that institution within the last year, but

in this case, the perversity of the patient led him to interfere continually with the counter-extending band; and the frequent alternations of extension and counter-extension explained the accident.

I have also imitated the second method of applying the handkerchief very satisfactorily, with strips of Holland linen lined with buckskin—but as no method of commanding the position of the foot with the same degree of certainty without leaving a few stiches in contact with the skin has yet been discovered, the band is still imperfect, and need not be described at present. Any ingenious surgeon will perceive, without description, the manner in which it should be made, if we neglect this power of adjustment.

With regard to the counter-extending bands, the directions given in the books are generally imperfect, and the young surgeon is left to form them pretty much as he pleases. Some use a long roller doubled upon itself several times lengthwise, which invariably produces ulceration of the perineum. Some employ a long narrow bag filled with tow or cotton, which is not only compressible, and therefore uncertain in its action, but the stuffing soon becomes either hard and matted, or collected into lumps or irregularities. What wonder then that these bags cause excoriation!—Some make their bands by tying several silk handkerchiefs together; which is often the best temporary arrangement, and is also vastly preferable to the other measures as a permanent dependence. But few introduce a piece of soft buckskin between the band and the skin, which would at once remove the chief objections to each of the plans just mentioned, and those who do, are so frequently disappointed by finding the buckskin continually slipping off, that they often resort to adhesive plaster to secure it. *If the plaster were turned towards the band, this manœuvre might indeed be of some use!* but unfortunately it is generally turned toward the skin, where it inevitably occasions much irritation, and very often still worse consequences.

Having witnessed these imperfections of the bands in common use, I contrived, in 1819, the following, which was soon employed in all cases treated by Dr. Physick's method in the Pennsylvania Hospital, but was lost sight of during the internal changes of organization in that Institution which commenced in 1823. It was again introduced by Dr. Kirkbride.

Take a piece of Holland linen long enough to extend round the perineum and to reach, before and behind, above the crista of the os ilium. Let its width be about three inches, for the adult—double it, and sew the edges together firmly, with a secure selvage, leaving one end open and closing the other. Revert this sac by means of a large

bodkin or small stick, and then pour in bran or chaff sufficient to fill it lightly. Then quilt nearly one-third of the closed extremity so as to flatten it to the thickness of half an inch or less. Next stuff the bran or chaff firmly down with a round stick, till the central third or a little more is rendered round and quite firm. Pour in a little more bran or chaff,—close the open end of the sac, and quilt the terminal third as before. To each end of the sac sew a broad piece of tape three-fourths of a yard long, and the band is complete. Next take a piece of soft buckskin, about three inches and a half wide, and fully half as long as the sac—double this, and stitch the edges lightly together, leaving the ends of the tube open. This is used as a cover.—When applied, the cover is made to slide over and enclose that part of the band which presses on the pubis, perineum, and tuberosity of the ischium, and the seam being *turned from these parts*, the cover may be fixed permanently to the sac by a single stitch. If soiled, which seldom happens, the band is protected and the cover may be replaced. The flattened ends of the sac lie under the nates and over the lower part of the abdomen. This band is at once soft, flexible, and inextensible. It is simple, and the materials for its structure always at hand. I have never seen it occasion irritation.

One word to the country practitioner, whose immediate resources in accidents are often limited, and I will close this rather lengthened essay.

There is scarcely ever a necessity for rapid action in a case of fractured leg or thigh; but it would be wrong to leave the patient to undergo the gradual shortening of the limb from continual muscular action, while the surgeon rides twenty miles for his splints—perhaps visiting an obstetric case by the way—or while he superintends the preparation of these indispensable instruments, in the shop of some village carpenter who never saw what he is required to make. Let him then secure the limb by temporary means, and save his patient the exquisite pain of involuntary motions, the irritation from the pressure of the fragments upon lacerated muscles, and the increased force required to conquer the contractions. The dairy maid's apron will serve him for counter-extension, and his own pocket handkerchief for extension. Let the patient be placed on the bed diagonally, and employ one head-post and the opposite foot-post, for securing the bands. The surgeon can then proceed coolly and leisurely for his apparatus, certain that his patient suffers but little, and that scarce any thing is lost by the delay.

I have been driven to these straits myself, and I would never leave the bed-side without securing the patient against retraction of the limb.

ART. IV. *Remarks on the Sandwich Islands; their Situation, Climate, Diseases, and their suitableness as a resort for individuals affected with or predisposed to Pulmonary Diseases.* By ALONZO CHAPIN, M. D., late a resident missionary at those Islands.

The following remarks, founded on cursory observations, while at the Sandwich Islands, where I resided three and a half years, have been written since my return to this country. I did not, while on the spot, note facts and events as they occurred, not having had in view at the time, to present them to the public, and not having contemplated a return, till the circumstances of my family rendered it necessary to seek a colder climate. I consequently can offer my remarks as mere reminiscences only. My inability to state with more fulness and particularity, several of the subjects included, I much regret; but some apology may be found in the brief period of my residence at the islands,—in the difficulties presented by the ignorance and prejudices of the people, to making correct and satisfactory medical observation,—and also in the great amount and variety of labours required, in the discharge of our missionary duties, which prevented an improvement of such means as were accessable.

The Sandwich Islands, eight in number, are situated between 18° 50′, and 22° 20′, north latitude; and 154° 53′, and 160° 15′, west longitude. Two or three barren rocks are usually numbered with the other islands; but only eight are inhabited or have any vegetation. In their dimensions they vary greatly; the smallest not being more than eight or ten miles long, while the largest is ninety miles long, and fifty or sixty in breadth. The whole group is collectively called Hawaii* by the natives, because that is the largest island, and the others were all subjugated by Kamehameha, one of its kings.

The interior of each island is uniformly elevated, and among them are found mountains of the first order of elevation. Those on Hawaii rise to the height of about 14,000 feet, and have snow on their summits a great part of the year. The whole group are of volcanic origin. Numerous extinct craters of different periods and dimensions are scattered over the surface, and two large volcanos are still in action, affording immense currents of liquid lava.

The shores of the islands are much diversified, and furrowed with

* The term, *Owhyhee*, is still erroneously applied by most foreigners to the largest of the Sandwich Islands. The letter *o*, which is sometimes prefixed by the natives, and sometimes omitted, is merely a sign of the nominative case. That being rejected and the European continental sound, the sound used by the natives, being given to *a* and *i*, and the name becomes clearly *Hawaii*.

frequent ravines, some of great depth, which furnish courses for the impetuous mountain streams. Plains of different dimensions, varying from a few rods to many miles in extent, are frequent. More commonly, however, the mountains extend with a gradual slope entirely to the beach, and here and there present bold and lofty precipices to the dashing of the waves. The sides of the mountains, if we except the loftiest, are verdant entirely to their summits, and present immense tracts of an exceedingly fertile soil.

The leeward shores have generally an arid and even sterile aspect, owing to the infrequency of rain. Vegetation is there promoted mostly by irrigations from the streams, and it is only those tracts immediately contiguous to these which possess much verdure, or will admit of cultivation. The condensation of the vapour, from the damp trades in their passage over the mountains, produces continual rains on their summits, which, extending backward towards the sea, keep the earth wet much of the time, and give rise to a most luxuriant growth of vegetation. Hence the windward sides of all the islands are, unlike their leeward shores, extremely fruitful and productive.

The productions are such as are common to all intertropical regions. The *sweet potatoe* and the *kalo*, (*Arum esculentum*,) are the vegetables in the most general use, and on them the natives mostly subsist. If we except a few fruits, and a scanty and irregular supply of fish and other meats, they have little else to eat. The mountains abound in esculent roots, both mild and nutritious, which constitute a ready and abundant supply for their sustenance whenever, as sometimes happens, they are pinched by drought or famine. Other vegetables, and a considerable supply of fruits are cultivated, though the variety is not great. *Sugar cane*, *bananas*, and *yams* are abundant; and foreign productions are beginning to be extensively cultivated for the special purpose of supplying ships.

The *Arum esculentum*, which is more generally eaten by the inhabitants than any other vegetable, grows like the *Arum triphyllum*, in wet or damp situations only, and when uncooked is like that, exceedingly styptic and acrimonious. These qualities are destroyed by heat. The natives prepare it for use by cooking it thoroughly, pounding it to a pulp, and adding water sufficient to make of it a thick paste, in which state it is called *poi*, and is eaten with one or two fingers, according to its consistency. As an article of diet, it is simple and nutritious; and after the fermentative process has commenced, it is preferred by the people.

Climate. Situated in the very midst of the vast Pacific, without any extensive inland causes to affect the temperature, and remote

from the cold chilling winds of the temperate and frigid zones, the Sandwich Islands possess a remarkable evenness in the degrees of atmospheric temperature. Cool breezes by day from the sea, and by night from the mountains, serve to mitigate the burning heat produced by a vertical sun, and to render the climate pleasant. The thermometer varies but little from day to day, and even from month to month; and what is particularly to be remarked, all portions of the islands, along the shores, are alike in this respect. Districts most parched by heat and drought do not differ essentially in temperature from those sections where almost daily showers and perpetual trade-winds prevail. As, however, we recede from the low lands along the sea and ascend the mountains, a change is immediately perceived, and along their extended sides we may procure almost any degree of temperature. Retreats have been fitted up in elevated situations for the benefit of invalids relaxed by the long and continuous heat below, but have been found objectionable on account of the great dampness caused by the frequent showers, and have been abandoned.

The register of the thermometer, which I subjoin, was furnished by the missionaries residing at Hanolulu, on the southern side of Oahu. Their observations were made during the years 1821 and 1822, at the hours of 8, A. M., and 3 and 8, P. M. I copy it from Ellis' Polynesian Researches.

Months.	Greatest heat.	Least heat.	Range.	General range.	Mean temp.	General course of the wind.	General state of the Weather.
August, 1821.	88°	74°	14°	75° to 85°	79°	N. E.	Clear; rain but once.
September,	87	74	13	76 " 84	78	N. E.	Rained on five days.
October,	86	73	13	76 " 83	78	N. E.	Clear; rain but once.
November,	82	71	11	75 " 80	76	N. E.	Clear; rain but once.
December,	80	62	18	70 " 78	72	N. & N. E.	Clear, rain twice.
January, 1822.	80	59	21	58 " 76	70	variable.	Rain one day; cloudy eight.
February,	77	61	16	58 " 75	71	N. E.	Rain four days, cloudy fourteen.
March,	78	66	12	71 " 75	72	N. E.	Rain five days; cloudy thirteen.
April,	81	62	19	72 " 78	73	variable.	Rain five days; cloudy seventeen.
May,	81	72	9	75 " 80	76	N. E.	Rain four days; cloudy seven.
June,	84	71	13	76 " 81	78	N. E.	Cloudy six days.
July.	94	74	10	76 " 83	78	N. E.	Rain five days; cloudy twelve.
Results for the year.	88	59	27	70 " 80	75	N. E.	Rain on forty days. Usually clear the rest of the time.

By this register it will be seen that the greatest heat during the year was 88°, the least heat was 59°, the mean temperature 75.

Rev. William Richards, residing at Lahaina on the island of Mani, has, during the past ten years, been in the habit of noting the changes of the thermometer. He has made his observations with great care, having sought those situations most favourable to exactness. I have a copy of his journal in my possession. It exhibits the highest thermometrical elevation at 86°, the lowest at 54°, the extreme difference

32°, and no day during the whole period exhibits a difference of more than 19°. June has the highest range, January the lowest. Lahaina is situated near the north-western extremity of the island, and is not affected by the trade winds except as they occasionally break with great violence over the northern end of the mountains. It is one of the most arid districts of the group, and has seldom rain sufficient to moisten the soil through its whole depth, except in the winter or rainy season. For months in succession the sun is scarcely obscured by clouds, and its exemption from the direct influence of the trades might lead us to expect several degrees of the thermometer above the more wet and windy portions, but so far as my observation has extended, and I have visited every important island, it is not the case.

Diseases. Such is the equableness of the climate, and the simplicity of the natives in their regimen and most of their habits of life, that compared with *civilized* countries, the variety of their diseases is neither numerous nor complex. Their remoteness from other lands is so great that but few contagious diseases are imported among them. Even the *cholera* which has of late passed over almost the whole surface of our planet, became inert and powerless before it reached those islands.

The diseases most common within my circle of observation, were *fevers, ophthalmia, catarrhs and asthma, rheumatism, venereal, diarrhea,* dysentery, *cutaneous diseases, scrofula, dropsy,* etc., and they occurred, in frequency, in about the order in which I have mentioned them. Diseases sometimes occur epidemically, as was the case with catarrh repeatedly, and croup once during my residence at the islands. Many other diseases, not specified, were often met with.

Fevers. Though these are the most frequent and numerous class of diseases among the native population, they are by no means the most malignant and fatal. They occur in almost every form, but when idiopathic are usually remittent. They are, however, most frequently symptomatic of other diseases.

The excitable state of the system, which predisposes so strongly to febrile attacks is not common at these islands. The *continued* and *oppressive heat is there not sufficient of itself to produce it;* and the universal custom among the people, to repose during the hottest part of the day, will aid in counteracting other unfavourable influences. The simplicity, too, of their diet and habits of life are not calculated to promote a state of excitability. Their food, as I have before remarked, is mostly vegetable, with but a scanty and irregular supply of meat. Until of late they have made use of none of the stimulating condiments so *profusely* employed in *civilized* countries. Their only

drink is water. The laws of most of the islands prohibit the use of ardent spirits, and the mass of the people can but rarely obtain it. In their movements, the natives are extremely moderate. They walk with a slow step, rest long and often when tired, and placing no value on time they do everything leisurely and to suit their convenience.

Worms in the intestinal canal are not, so far as my observation has extended, of usual occurrence. The children of the mission, who numbered more than sixty, were entirely exempt, and no case of the existence of worms among the native population came to my knowledge One individual, a native of this country, who had been for several years a resident of the islands, was affected with ascarides, and this was the only case I met with.

Malaria. Before going out to the Sandwich Islands, I spent several years in our southern states, much of the time in the low country of South Carolina; and was, during the hot seasons of the year, accustomed to recoil at every standing body of water, on account of the poisonous exhalations which they there emit, endangering the lives of every individual exposed to their influence. On my arrival at the islands, I more than once made the inquiry, "why the numerous kalo ponds are not productive of sickness." Thousands of acres are entirely converted into ponds of standing water in which the natives cultivate their kalo, while their houses are built on the narrow spaces between. These are never dry, and are often so numerous as to exhaust entire rivers in keeping them filled. I could not at once reconcile my mind to the belief of their innoxious tendency, notwithstanding circumstances are such as to make the fact very obvious. Though the ponds are subject to the perpetual influence of a torrid sun, they cannot become putrid by reason of the continual supply of fresh water, and multitudes of fish live and thrive in them, such is their freshness and purity.

The streams originate from springs and rain on the summits of the mountains, pour down their sides with great impetuosity and after a few meanderings are turned aside from their courses to irrigate the lands and replenish the ponds, or are discharged directly into the sea; and I know of no body of water emitting sufficient miasma to create sickness along its borders. I have occasionally met with stagnant ponds, which emit a foul and offensive odour, and could in no way satisfy myself of the reason for the exemption of the inhabitants along their borders from fevers, but by supposing the effluvia to be diluted and rendered inert by the continual currents of winds.

Small marshes abound but are fed by springs, and the pure mountain streams, and are thus prevented becoming noxious. They

speedily dry up during a few weeks absence of rain; and the rivers also disappear unless kept alive by frequent showers, and the small pools, which remain at such times and which abound after every rainy season, do not become sufficiently putrid to exhale a *fever-generating* miasm.

If any one variety of *soil* has a specific power to produce malaria it does not appear to exist at those islands. The upland soil is there formed of decomposed lava, the lowland plains along the sea are constituted of a mixture of alluvion washed from the mountains, and decomposed coral. Its immunity from noxious exhalations is the same, whether parched with drought, or merely moist, as when the evaporation is most abundant, after the rains.

The habitations of the natives are for the most part considerably scattered, but are in a few instances crowded together in such numbers as to exhibit the dense appearance of our large towns and villages. There is, however, throughout an entire exemption from those pestiferous exhalations which, so extensively, poison the atmosphere of populous places in hot climates. All animal and vegetable substances thrown away by the people, or cast up by the sea, are quickly devoured by the multitudes of starving dogs and swine, so that no detriment is experienced from their putrefaction.

With so entire an exemption from the existence of miasmata, there is also an entire exemption from those affections induced by it. Malignant bilious fevers do not occur, and as I shall, hereafter, have occasion more particularly to state, derangements of the liver and biliary organs do not prevail, neither is the stomach and intestinal canal, and other organs of the abdominal viscera subject to the numerous and complicated affections so common in every miasmatic region.

Having enumerated several causes which do not operate to affect diseases at the Sandwich Islands I shall next state some particulars of a cause which operates more extensively than any other morbific agent, and produces probably more than one-half of all the diseases which exist, and more than three quarters of all the idiopathic fevers at the Islands.

Cold. The dwellings of the native population are merely slender frames of posts and poles tied together with strings and covered only with thatch. They are generally small, often so low as not to admit of standing erect within, and in their best condition serve as an imperfect protection from the wind and rain and the excessive heat of a vertical sun. Every atmospheric change is quickly felt. Cold and dampness easily penetrate, and no sooner exist without than they are felt within. Add to this, their leaky condition, the almost naked state

of the inhabitants, their common practice of sleeping at night on the bare earth, outside of their houses, and their habits of continuing long in the water and exposing their bare bodies to strong currents of wind, when overcome with heat and covered with perspiration, and it will not be surprising that diseases incident to such causes should abound. Fevers, induced thereby, are hence numerous. They, however, are commonly simple in their type, and may often be relieved by merely restoring the skin to its healthful action.

Ophthalmia, of the purulent form, abounds in every portion of the group, and opaque corneas and thickened coats of the eyes, are very numerous. The old and the young are alike affected by the disease; very small children are occasionally met with nearly blind from its effects. I at one time attributed its prevalence to the effects of the clouds of sand often raised and blown about with great violence by the strong trade-winds; but finding it equally common in those districts where frequent rains prevent the dust from ever rising, there appeared to be no other cause so active as the trade winds, which are constantly prevalent, and come mingled with salt spray.

Pulmonary diseases. Sudden and severe atmospheric vicissitudes, the main exciting cause of pulmonary affections, do not occur at the Sandwich Islands, and with the accommodations for protection and comfort which are possessed in every civilized land, diseases of the respiratory organs would be far more rare. Such, however, are the habits and practices of the people, and so exposed are they to the influence of every atmospheric change that *asthmas* and *catarrhs* in particular, are of very frequent occurrence. The latter, are, however, usually mild in their character, ephemeral in their existence, easily yield to remediate applications, and rarely pass into the more inveterate and fatal stages of pulmonic diseases. Another very prevalent cause of the production of *asthma*, is a habit among the chiefs and wealthier portion of the common people, of inordinate eating, amounting even to gluttony. Their capacious stomachs are distended not less than four or five times a day with truly surprising quantities of flesh and poi; in connexion with this their indolent habits, their aversion to mental or bodily efforts, and their practice of sleeping often, produce a gross appearance of their persons, an extreme corpulency of their systems, and powerfully predisposes them to apoplexy also, and the acute forms of other diseases. This class of the population is not however large.

Rheumatism is of very frequent occurrence, notwithstanding the very prevalent belief, that "it is almost peculiarly a disease of cold and variable climates, and is rarely met with in warm and more uni-

form latitudes." Indeed there is so much similarity in the customs and habits of savages in all portions of the torrid zone, that I can see no reason why the Sandwich Islanders in particular should be affected with rheumatism, and am irresistibly led to the conclusion, that it is equally prevalent at the adjacent islands, and at all places throughout the intertropical regions, where the same exciting causes exist. The disease is usually mild in its attacks, soon passes off even without the application of medicinal means, and is seldom followed by severe secondary effects. Gout might be expected to be common as a consequence of the gross and intemperate habit of eating practiced by the chiefs; but the mild quality of their food is not suited to promote a gouty diathesis.

Venereal diseases. If it be a fact that the aborigines of America were affected by syphilis and gonorrhœa before Europeans visited them, or if, as is presumed by Dr. Thompson, "syphilis has been thousands of times generated *de novo* by impure sexual intercourse," it is certain that neither disease existed, or was known at the Sandwich Islands before the visit of Captain Cooke in 1779. The natives had ever lived in the practice of promiscuous and almost unrestrained sexual intercourse, so that the women were often unable to designate the father of their children; still their practices were not attended with those consequences which follow the licentious in all civilized countries. Those who have the credit of the discovery of the islands, and of exhibiting first to the astonished gaze of the simple and ignorant natives, some of the ingenious and useful implements and commodities of enlightened lands, and who sailed in ships so enormous in size as to have been regarded as floating islands, inhabited by supernatural beings, must also receive the credit of having introduced among these islanders two of the vilest and most loathsome diseases ever sent as a punishment for transgression. And upon the same page on which is recorded the benevolent efforts made to improve their condition and circumstances—the friendly interference to reconcile contending parties and stay the desolating ravages of war and effusions of blood; and the liberal donations made in return for the boundless hospitality and princely presents received from the natives; let it also be recorded that they entailed on their benefactors, a disease which has "grown with its growth and strengthened with its strength," which has extended its course with destruction and death, till all portions of the group have become infected, and countless multitudes have fallen victims to its power.

With such an introduction, the venereal disease has for the past fifty-seven years continued to spread and increase; perpetuated and

extended too by almost every vessel which touches at the islands, till words would fail to express the wretchedness and woe which have been the result. Foul ulcers, of many years standing, both indolent and phagedenic, every where abound, and visages horridly deformed—eyes rendered blind—noses entirely destroyed—mouths monstrously drawn aside from their natural position, ulcerating palates, and almost useless arms and legs, mark most clearly the state and progress of the disease among that injured and helpless people.

I have seen more than one case of marasmus induced by the difficulty of mastication and deglutition. The mouths of these patients were almost closed in the process of cicatrization, and the gums and fauces were destroyed by ulceration. In one of my patients suffering with the secondary symptoms of the disease, in which I was successful in stopping its progress by a mercurial course, the external nose had entirely disappeared, and its place was occupied by a concavity and a foramen of an irregularly oblong form. The left eye was totally blind, and both so disfigured by ulceration as almost to lose their identity. The mouth was shockingly deformed; the lips and alveolar processes mostly removed by absorption, and the teeth having their necks and a portion of their roots divested of integuments, were irregular in their distances and positions, pointed in every direction, and but slenderly adapted to the purposes of utility. The whole countenance was much disfigured by deep eschars, and the body greatly emaciated; no food could be masticated by him, so bad was the condition of his mouth.

The reflection is melancholy, that there is no prospect of this disease, so disgusting in its effects and destructive in its course, being soon eradicated. The natives possess, among themselves, no curative means which will control it. But a small portion have ready access to foreign physicians, and many within reach appear too indifferent to their condition to make application, while most permit the disease to go on till secondary symptoms appear before they seek assistance. These circumstances together with their prevailing and inverate habits of promiscuous sexual intercourse, will serve still, to perpetuate and extend the disease.

Diarrhœa and dysentery have besides the usual exciting causes which prevail in most places, an additional fruitful source, in a blind and barbarous practice of using immoderately the most powerful and drastic cathartics. The inside of the calabash (*Cucurbita lagenaria,*) triturated seeds of the castor oil, the fruit of the candle nut, *(Aleurites triloba,)* two or three species of *Ipomeæ* and some other drastic articles are given in such doses as sometimes to create the most obstinate and dangerous dysenteries. I have known a case in which the average

operations of four cathartics, given to disperse dropsy, were twenty-one, the aggregate eighty-four, and another case in which a man from a fear that he would be sick, took such an enormous dose of the calabash as to produce a hemorrhagy which proved fatal within a few hours.

Cutaneous diseases and Scrofula. Though the Sandwich islanders are remarkably fond of the water and are fastidiously particular in their practices of washing and bathing, they are, nevertheless, extremely filthy and squalid in many of their habits of life. With their beasts and fowls in the same habitation, and not unfrequently on the same mats with themselves, their often repeated ablutions will be regarded as timely. The kapa or native cloth used by the inhabitants is worn without cleansing till having become foul with dirt and vermin, and too ragged to serve longer the purposes of covering or protection, it is lain aside. Hence diseases induced or exacerbated by such causes have at those islands a fruitful soil and flourish luxuriantly. The *itch* is extremely prevalent, and often assumes a virulence unseen in this country, the pustules sometimes becoming confluent are converted into large and troublesome ulcers. Other scabious affections exist. *Scrofula* is not only frequent but extremely malignant. The difficulty of inducing a salutary change in the habits of the people, has rendered hopeless the expectation of effecting its entire cure.

Hepatitis. The frequent occurrence of hepatitis in hot climates is ascribed by Dr. Saunders and others to the prevalence of a peculiar miasm in those regions, and if this be true, hepatitis will not be expected to predominate at the Sandwich Islands, where there is no evidence of the existence of any miasm whatever. Indeed hepatic disorders are not merely uncommon there, but they do not appear to be incident to those seas.

The Pacific is thronged with American and English whaling ships, which cruize from three to four years, and as they change their ground to the north or south of the equator, with the change of the seasons, they are continually exposed to the hottest latitudes, and are much of the time within the torrid zone. Of these, a large number touch semi-annually at the islands for supplies, and though my practice among the seamen has been extensive, I have been called to prescribe for only two or three cases of inflammation of the liver, and in no instance have I met with the disease in its acute form. The heat to which the sailors are subjected during calms at sea, is often intense; and if the existence of hepatic disorders is owing mainly to the close sympathy between the biliary and perspiratory organs, the etiology proposed by Dr. Johnson, I certainly ought to have met oftener

with it. I introduce this digression because it agrees fully with my experience and observation among the native population, and accords with the view that heat is not sufficient of itself to induce hepatitis.

No place can be found more exempt from biliary diseases than these islands, and yet the sun is vertical twice each year, and the heat is perpetual. Such also is the belief of Dr. Judd, my medical associate, who has been a resident more than eight years, and whose means for observation have been ample. Two or three gentlemen of the mission, who had chronic diseases of the liver when they went to the islands, have not only spent several years without any exacerbation, but one of them is quite relieved of the complaint. Among the natives I had no evidence of its frequency, though Lahaina, the place of my residence, contains a population of from three to four thousand. The island of Maui on which it is situated, has more than thirty thousand inhabitants. I was the only physician among them, and had numerous patients from the adjacent islands, Hawaii, Molokai and Lanai.

The fine rows of *teeth* possessed by the natives will attract the notice of every stranger. The oldest inhabitants have generally their teeth in perfect order, except such as they have knocked out from time to time, on occasions of the death of chiefs or of their friends. The reasons are obvious: they make no use of acids or other substances which tend to effect rapidly the destruction of the enamel; they are free from those diseases of the stomach and of the nervous system which operate most actively in producing carious teeth; and they rarely eat their food while hot, and the water which they drink is usually no colder than that of our rivers during the heat of summer.

Surgery. Having among them no *rail-roads* or *steam-boats* or machinery of any kind to cause fractures and contusions, and being surrounded by few of those causes which produce accidental injuries, operative surgery is less frequently brought into requisition than in this country. The extirpation of tumours employed the scalpel oftener than all other cases, and occasionally an incurable ulcer or other cause rendered amputation necessary.

Diseases of Females. The females mostly marry before the age of puberty, and but few pass the first catamenial period without having had sexual intercouse; and the opinion is prevalent that the menses are the effect of coition, and their appearance in an unmarried girl is regarded as evidence of illicit conduct. This universal practice of premature sexual intercourse, is probably the principal cause of unfruitfulness among the women. How far they are affected by the venereal disease, is not certain. Multitudes live childless, and cases

are rare of a woman's giving birth to more than four or five children. *Fluor albus* is universal, and exists abundantly in its worst forms; uterine hemorrhage is frequent and obstinate. *Displacements of the womb* are of common occurrence.

In parturition the women are not specially favoured, but suffer *equally with the labouring class of females elsewhere.* In this assertion I believe that I am opposed by the general opinion of the medical profession. Uncivilized life is regarded by the highest authorities as peculiarly favourable to women in child-birth. Cases are stated by them, "of the barbarian female turning aside from her wandering tribe to some secluded spot, delivering herself, and after bathing herself and her new-born infant in the pure stream, overtaking her companions and pursuing with them her course." All this may have occurred, and every accoucheur of experience must have had cases nearly parallel. On this subject, however, I believe that further information is needed, founded on more correct and extensive observation. I draw this conclusion from my own experience, in a situation peculiarly favourable for observation. The females of the Sandwich Islands have every advantage from the relaxing influences of a hot climate, great simplicity in diet and habits of life, and constitutions invigorated by free and unrestrained exercise. I have indeed witnessed, among them, labours in which the parturient and after pains seemed not to exceed the same in the brute creation; and I have also had my severest cases of midwifery among them. In several instances the uterine and vaginal rigidity has been excessive, and the suffering severe and protracted. Their midwives can do nothing in preternatural labours; and in mal-positions of the fœtus, the woman dies unless delivery can take place by spontaneous evolution.

Diseases of Children. The ignorance of parents, and their frequent indifference to the comfort of their offspring, subject them to a great amount of unnecessary suffering and disease, during the period of infancy and childhood. The only covering provided for them is merely a fold of kapa. This is ordinarily all that is needed, but being wrapped loosely around them, they may at any time divest themselves thereof and become exposed to the full influence of the severest atmospheric change; and if this happen in the night, the sluggish parents either wrapt in deep sleep, or averse to moving during the hours of darkness, suffer their helpless little ones to lie, benumbed with cold and exhausted by crying, till morning at length comes to their relief. Catarrhs, asthmas, and particularly fevers, are hence abundant, and the seeds of numerous future diseases are, doubtless, laid at such times.

Their cleanliness is also greatly neglected. An occasional immersion at mid-day is perhaps the only ablution performed, and the constantly accumulating filth over the surface of their bodies, subject them to the prevailing cutaneous diseases and scrofula; while the folds of their joints, the nates and vagina being so much neglected, are extensively affected with excoriations and ulcers. Add to these the practice of feeding them with the crudest and most indigestible food nearly as soon as born, and it is a matter of wonder that so many survive the infantile discipline.

Medical Views and Practices.—Did they possess sufficient dignity and importance, I might detail some of the medical views and practices of the natives. Suffice it to say they are made up of a mixture of absurdities the most ridiculous, and often dangerous.

The native medicines have, some of them, value, were they skilfully employed; but, used without principle or judgment, they are, as has been already stated, often the means of irremediable injury.

Charms and incantations have a conspicuous place in their therapeutics, and often lead to practices the most shocking. Many have been pounded and roasted to death from a belief that their diseases were the effect of an indwelling spirit. Nor is it in all cases needful that the patient should be actually suffering with disease; the mere apprehension of future sickness is sufficient reason for having recourse to remediate measures, and truly fortunate is he who has sufficient strength of constitution to withstand the baneful influence of their more drastic doses.

Population.—When Captain Cooke visited the Sandwich Islands in 1779, the population was estimated, and probably with correctness, at 400,000. According to a late census there are now about 135,000, making a decrease of 270,000 in the space of fifty-seven years; and it is computed by the Rev. W. P. Alexander, one of the missionaries, who has with considerable pains ascertained the births and deaths of a large section, that there are annually 6838 deaths and 3335 births on the group, making more than twice as many deaths as births. If this be correct, it will not seem incredible that the population should have so greatly diminished, and that, too, in so short a period. And it will further appear that not many years will be required, at this rate, to depopulate the islands of the native inhabitants.

The causes of this decrease are too numerous to specify, but some of them may be enumerated.

Captain Cooke found the Sandwich Islanders living, like all savage people, in habits of the greatest simplicity, seeking only the supply of their necessary wants; and in a climate requiring so little clothing,

and with a soil producing spontaneously so many of their articles of consumption, that but little labour was requisite to satisfy every desire. They were then unacquainted with the infinite multitude of unnatural wants and practices which deteriorate mankind in all civilized lands. They were a hardy and athletic people. The process of alcoholic fermentation was indeed well understood by them, and they could make intoxicating drinks from a variety of vegetables, but they had not used them in such quantities and so frequently as to make drunkards of themselves. The reasons of this devastation must then be looked for on the catalogue of changes and innovations introduced from abroad; and to the influence of visiters from enlightened and civilized countries, chiefly from England and the United States, are to be attributed the great alteration in the native character, and this appalling diminution of their numbers. During the past fifty-seven years, the time since their first discovery, we ought, after making every allowance for losses by their wars, to find the population increased at least one-half. But instead of 600,000 there are now only 135,000, leaving an actual loss to the nation of 465,000 inhabitants, chargeable directly to the customs and vices carried there from other places.

The venereal disease has destroyed its thousands, and by its influence in inducing barrenness of the females, has probably prevented tens of thousands from ever seeing the light.

The introduction of alcoholic liquors has produced its accustomed amount of wretchedness and misery, and consigned great numbers to untimely death.

The use of tobacco has evidently a deleterious influence on the natives, whatever may be its effects on others. In smoking, the natives do not sit down deliberately and finish a cigar or a pipe, but take one or two *quiffs*, inhaling the full volume of smoke directly into the lungs, and retain it there as long as the breath can well be retained. Individuals have been killed by its effects, and how much disease may have been induced or exacerbated thereby remains to be ascertained.

The large quantities of foreign commodities carried to the islands, and the increasing intercourse of the inhabitants with foreigners, have created such an amount of new and superfluous wants as to destroy their native character, and to make of them an artificial and degenerate race.

The introduction of Christianity within the past few years has exerted its usual benign influence, but the changes of every kind have nevertheless been great and rapid, and the people have fallen and are

continuing to fall under the effects of these changes; and their end may be read on the same page which records the fate of the wandering tribes of America. Such must inevitably be the case, unless a kind Providence greatly bless those measures used for their present and future interests.

The Sandwich Islands as a resort for individuals predisposed to, or affected with, Pulmonary Diseases.—As a residence for consumptive patients, two circumstances will here require attention: the voyage to the islands, and the residence there.

A passage to the islands may now be obtained at almost every season of the year. Merchant ships bound directly there, or to touch there on their way to Columbia river and the north-west coast, frequently sail from our cities; and whaling ships are continually leaving for the Pacific, more particularly in the fall, and many of them, without delay, make their way directly to the islands—opportunities will therefore be sufficiently frequent. The voyage occupies from four to five months; and by leaving this country in the fall, Cape Horn is doubled in the season the warmest at that place. Still, however, the latitude is so high, that the cold, even at that season, is severe; and, amid storms of snow or islands of ice, and furious gales of wind, it may be necessary to spend many weeks in beating around. Another route, much shorter, and on many accounts preferable, is to sail for Vera Cruz, and cross the isthmus with one of the caravans continually travelling there. Numerous trading vessels pass and repass from the western coast to the islands, and would afford a passage. The whole route may be made in two months, should a vessel be ready to sail from the isthmus; but as that would be uncertain, a considerable delay might be caused in waiting for one. As, however, the place of detention is within the tropics, almost on the equator, the climate could not be an objection to a short residence there.

On arrival at the islands, the climate will be found, as has been already stated, extremely pleasant and equable, *and not surpassed in salubrity by any in the world.* Indeed, what place can be found more uniform?—the thermometer, during a space of ten years, not having varied more than thirty-two degrees; and where no day during the same period has a variation of more than nineteen degrees; where the same clothing is found comfortable the whole year, and where no other regulator of the temperature is needed than simply to open or close a window. I have reference here to the western sides of the islands. The eastern or windward sides, receiving the continued influence of piercing trades during the cooler season, some additional protection is needed.

In further confirmation of the salubrity and healing influence of the climate, it may be remarked that several of the members of the mission have entered the field with pulmonary affections, who were regarded as doomed to certain and premature death if they remained in this country, who now enjoy good health, and are entirely free from any abiding symptoms of disordered lungs.

Accommodations, recreation, &c.—There are scattered over the group probably five or six hundred foreign residents, of whom at least three-quarters live at Honolulu, on the island of Oahu, (Waohoo of Cooke.) This place has a population of six or seven thousand inhabitants, is laid out with some regularity as to streets, and has a considerable number of buildings, very respectable for size and appearance. The houses of the natives are mostly constructed after their own style—upright poles covered with thatch. There is a neat chapel, in which there is preaching twice every Sabbath by an intelligent American clergyman, and in the same building are a public library and reading rooms, well supplied with the various periodicals.

Several American and English gentlemen have their wives and families with them, and there is constituted a small circle of refined and intelligent society. There are also several physicians—men of skill and intelligence. Boarding may be procured, with the comforts, and even luxuries and elegancies of life. Gentlemen can get comfortably accommodated for six or seven dollars per week, and plain board may be had for three or four dollars a week.

The market is well stocked with beef, pork, fowls of different kinds, fish, oysters, milk, and a variety of excellent culinary vegetables. Fruits also are abundant and cheap, such as melons, bananas and pine apples; berries and some other fruits are plenty in their season.

The means of gestation are abundant. Good horses and carriages can be procured, and the natural scenery is grand, inviting the lovers of nature in every direction. The harbour is well furnished with boats of every description, and vessels are continually sailing from island to island, and furnish pleasant excursions to the volcano, or elsewhere. A constant communication is also kept up with other portions of the world by vessels entering and leaving almost every week.

Honolulu is more particularly noticed here, because it is the only place on the islands where comfortable accommodations can be procured. Lahaina on the island of Maui, and Kailua on Hawaii are both more favourably located as to climate, and are not subject to the force of the trades.

The invalid will not look for sources of improvement or edification among the native population. He will there find a strange language,

an unenlightened population and barbarous customs. If, however, he possess benevolent and philanthropic feelings, he may find any amount of employment in the laudable work of promoting the improvement of the natives.

Of the sources of gayety and dissipation, I have nothing to say. Neither will be recommended to the invalid seeking restoration to health. But no stranger residing at the Sandwich Islands need suffer for want of recreation or employment.

In concluding my remarks, I must distinctly state, that I do not take upon myself the responsibility of recommending unqualifiedly the Sandwich Islands as a resort for consumptive invalids. The long voyage, and other circumstances, will render the project in most cases doubtful and often out of the question. I merely offer them to the consideration of such as they may specially concern, and leave it to such persons to judge of the attention they may deserve.

ART. V. *Worms in the Urinary Bladder, simulating Stone in that Organ.* By A. BRIGHAM, M. D.

SOME time during the past summer I was requested to visit Mrs. More, a married woman, aged thirty-five, living at Hartland in this state, for the purpose of removing a stone from her bladder. On inquiry I found there was no absolute certainty that she was afflicted with a calculus, though she had the symptoms which attend that complaint. Her medical attendant, a highly respectable physician of Hartland, had very frequently drawn off her water by the catheter, but had never actually felt a stone, though he was confident that at times he had felt some unusual substance, and supposed it to be a stone.

When she arrived in this city I learned from herself that she had been troubled for several years with difficulty of passing water, sometimes the difficulty was trifling, at others very great, producing great pain, fever, and often requiring the aid of the catheter. For the last six months she was compelled to have recourse to the catheter as often as once in every forty-eight hours. On sounding her, I could discover no stone, but was confident I felt some unnatural substance or tumour at the upper part of the bladder, though after repeated examinations I could not determine its nature or extent. I assured her there was no necessity for an operation, and as the secretion of urine was scanty,

directed a diuretic mixture, and requested to hear from her again in a few weeks.

About one fortnight after this, I received a letter from her physician, stating that Mrs. M. was entirely well,—that she had passed from her bladder with considerable pain, *a round white worm about six inches long*, and from that moment her complaints ceased.

She now says, though she did not mention it before, that when she was fourteen years of age, nearly a year after having had typhus fever, she was troubled with a difficulty of passing water, and then discharged a small worm about an inch long from the bladder, and in six weeks after another of the same size, which entirely removed her complaint at that time. For about four years she had no return of the difficulty, but since then,—the year 1819—to the present year, she has been afflicted with it, though not until the latter part of the time has it been very severe.

In the second volume of the Medico Chirurgical Transactions, there is a somewhat similar case, detailed by Mr. Lawrence, and drawings of the worms given. In this case, however, several hundreds of worms were discharged from the bladder, some of them quite small, others from four to six inches in length.

Are not such cases more frequent than is generally supposed? Every practitioner of much experience must have been occasionally perplexed with cases, occurring in females, of great difficulty and pain in passing water, and other symptoms indicating stone in the bladder, but which symptoms finally disappeared, and without his knowing the cause of their removal.

I know not of any certain remedy for such a complaint. In the case related by Mr. Lawrence, the urethra was partially dilated, after the existence of worms in the bladder was accidentally ascertained by one passing the urethra; and oil of turpentine was injected into the bladder, and large doses of this medicine was administered to the patient, but without any very decided benefit, though the injections were thought to rather expedite the passage of the worms. In the case of Mrs. M., I attribute the removal of the worm to the disturbance of it by the repeated and thorough examination of the bladder which I had made a few days before it passed.

Hartford, January 4, 1837.

ART. VI. *Reports of Cases of Insanity, treated at the Friends' Asylum near Frankford.* By CHARLES EVANS, M. D. Attending, and R. R. PORTER, M. D., Resident Physicians.

CASE I. *Moral Insanity, not hereditary—duration seven years—cured.*—E. P. of Delaware County, unmarried, ætat 30 years, carpenter by trade; came under our care April 10th, 1832; had been in the Asylum several months previously.

April 26th. Physical condition.—Stature medium; complexion fair; eyes blue; hair light brown; muscles well developed, firm, and in some parts rigid. Head unnaturally warm, and he complains of "a constant unpleasant sensation" in it. Conjunctiva slightly injected; tongue white, perfectly smooth and moist, looks as though covered with white paint, red at tip. Pulse quick and corded. Epigastric region tender upon pressure, muscles of belly very rigid, bowels costive, feet cold. At times very restless, walking quickly from place to place, and apparently unable to keep still: at such times the eye is preternaturally bright.

Moral phenomena.—Constantly unhappy and complaining, affection for his relatives and friends destroyed. Passions easily aroused, and when excited altogether ungovernable, requiring him to be forcibly restrained. Unwilling to follow his trade or perform any kind of work. No hallucination, and is conscious that his conduct is violent and irrational, but alleges inability to restrain or control the impulse to action. Has repeatedly, without provocation, struck and ill-treated his nearest, and those who had been his dearest friends, and expresses a fear lest at some time he shall take the life of some of those who are about him. His friends state that his natural disposition was quick and ardent, but affectionate and amiable; his habits regular and industrious, and that the alteration was first observed immediately after a severe attack of fever, and has been manifesting itself more and more ever since. During his sickness he has been repeatedly under medical treatment consisting principally of bleeding and purging, and he is in the habitual use of drastic purgatives to overcome the costive state of the bowels; has observed no selection in his diet, and is fond of strong food.

29th. Complains of some pain in his head, and that he is liable to unpleasant dreams. Apply cups to back of head, and give shower bath before going to bed.

May 7th. Appears considerably excited, head hot, tongue as be-

fore, pulse quick, feet cold, tenderness in epigastrium considerable, bowels have been opened by small quantities of magnes. sulph. Ordered him to be cupped two or three times a week over the stomach, mustard pediluvium at bedtime, and to wear socks dusted with Cayenne pepper. To be kept quiet and his diet to be restricted to arrow root and gruel.

10*th.* Has been cupped twice as ordered; says his head feels much relieved after the abstraction of blood from over the stomach, tongue as heretofore, head warm, feet cold. Continue treatment last prescribed.

19*th.* Has his passions more under control; says he feels much better; pain in head nearly gone; tongue still white in patches.—Continue treatment.

June 2nd. But little change since last report. Tongue cleaning slowly. Continue the same treatment.

12*th.* Little change since last report. Head too warm; pulse about 80; tongue retains its painted appearance, except along the edges, where there is a disposition to clean manifested; bowels again costive. Discontinue cups over stomach and apply them along the spine. Continue other treatment as heretofore.

26*th.* Has improved considerably, not so easily excited as formerly, converses affably, and is disposed to employ himself. Head pleasantly warm, tongue cleaning slowly, pulse nearly natural, bowels soluble. Renew cups over stomach once a week and continue low diet, pediluvium, &c. as heretofore.

July 5th. Pulse too quick, about 80, and full; slight "uneasy sensation" in head; tongue as before; bowels regular without medicine. Apply cups behind the ears.

14*th.* Has lost ℥xv. of blood from the back of head by two cuppings; says he feels better. Tongue coated, but the papillæ more distinct; other symptoms as before. Continue treatment as before ordered, viz: cups occasionally over stomach, stimulating pediluvium, low diet, &c.

21*st.* Complains of occasional "uncomfortable feelings" in head. Pulse nearly natural, tongue clean along the edges, bowels regular. Says he feels entirely different from what he did when his treatment commenced. Establish an issue behind each ear, and continue other treatment. Let him have the common vegetable diet of the house, and employ himself about the premises.

August 7th. Issues nearly healed, tongue almost clean, head cool and clear of unpleasant feeling, bowels regular without medicine. Re-open issues with caustic. Apply cups over stomach whenever

pain upon pressure, or the state of the tongue indicates irritation therein, continue stimulating pediluvium, &c.

21*st.* Continues improving, says his head is much better, tongue nearly clean and the papillæ distinct, bowels regular. Keep up discharge from issues. Let him have small portions of animal food.

September 6*th.* Exhibits very few marks of disease; head cool, tongue clean, pulse soft and slow, bowels regular, appetite good. He is gradually employing more of his time in his mechanical occupation, and in assisting about the premises. Affection for relatives restored.

29*th.* Discharged cured.

Remarks. In the pathological view of this case, it is worthy of remark, the close connexion exhibited between the affection of the brain producing the disturbance of the mental functions, and the diseased state of the stomach and bowels. Which of the two lesions had priority as regards time it is impossible for us to determine, but it is most probable that the attack of fever which ushered in the moral insanity, left both brain and stomach enfeebled or diseased, though the sensibility was not sufficiently excited at the time to produce pain. The patient, it appears, returned at once to his ordinary diet, and to obviate the sluggish action of the digestive apparatus resorted to drastic purgatives, in the use of which he persisted up to the time when placed under our care. The irritation produced and fed by these causes being transmitted to the brain, a mutual re-action between the organs was kept up until irritation was converted into inflammation in the mucous membranes of the former, as indicated by the state of the tongue, and tenderness of epigastrium; and it acquired such intensity in the latter as to disturb the manifestations of mind, and overthrow the original moral character. From this state of the brain arose the "uneasy sensations" in the head complained of by the patient. The heart and arterial system were sympathetically affected, and hence the accelerated pulse, and irregular circulation as shown by the hot head and cold extremities. Under this view of the case the obvious indication was to abstract from the diet every thing calculated to keep up inflammation, or requiring laborious digestion, and to overcome the existing phlogosis of the stomach and bowels by topical bleeding. The patient, in the early part of the treatment, always found relief from the pain in the head, by the application of cups over the stomach. Afterwards it became necessary to apply remedial means more immediately to the seat of the disease in the brain.

Case II. *Moral Insanity—Duration sixteen years—Death—Autopsy.* This patient was admitted into the Asylum several years before she came under our care; and we have found considerable diffi-

culty in ascertaining the few facts relative to the early history of the case.

At an early period she gave evidence of uncommon intellectual qualifications. She appeared to mature while young, and at sixteen years of age, was universally regarded both by her relatives and acquaintances as a model for imitation in conduct and manners. Though generally enjoying good health, her form was delicate, and her temperament nervous. When in the seventeenth year of her age she suffered an attack of fever; upon recovering from which, a great change was observed to have taken place in her whole character and disposition. From being modest and retiring, cheerful and easily pleased, industrious, and even ardent in the performance of her domestic and social duties, she became taciturn and melancholy, and perseveringly refused to aid in pursuing any plan which her friends devised for her restoration or amusement. No further than this, however, was there any evidence of a loss of affection for her relatives; but after a lapse of several months, another, and not less radical change, took place in her character and demeanour. Without any apparent cause, she suddenly became talkative, and even boisterous; lost all proper reserve; exhibited the utmost levity in her conversation, and appeared bent upon exercising the whole powers of her mind, (evidently not impeded in its operation by former disease,) either in almost uninterrupted conversation upon the most frivolous and outré subjects, or in giving vent to undeserved reproaches and unkind sarcasm upon those who had been her dearest friends. She now lost all affection for her parents, brothers and sisters, and began to exercise over the latter, who were her juniors, the most capricious tyranny, not unfrequently enforced by blows and other means of offence. She had, however, the art so effectually to conceal the evidence of this course of conduct towards them, as totally to deceive the parents, and render them for a considerable time unwilling to give credit to the representations of her violence. As during the whole course of this extraordinary conduct, there was no hallucination, and she at times appeared keenly sensible of, and deeply to regret, the impropriety of her behaviour, her friends could not believe her insane; and every means was resorted to, both at home and abroad, which suggested the least prospect of effecting a change. After a lapse of six years, all other measures having proved unavailing, she was placed in the Asylum. She remained in the institution two years, and was then so much improved that her friends deemed it advisable to take her home, where she conducted herself with considerable propriety for some time; but finally relapsed into her former condition,

and was returned to the Asylum in 1830, after an absence of two years.

The following is descriptive of her situation when she first came under our notice.

Physical condition. Stature medium; form symmetrical and well proportioned; features regular; hair dark brown; eyes hazel; complexion fair; skin soft; motion quick. Posterior part of head unnaturally warm; tongue slightly furred; pulse about 80; general temperature of body natural; digestive functions healthy, but her appetite precarious, sometimes voracious and again nearly lost; sleep light and disturbed.

Moral phenomena. All the intellectual faculties unimpaired. No hallucination; capable of reasoning, comparing, and judging upon all subjects as well as ever. Spirits high; manners forward, especially when in company with men; perpetual loquacity, quick in repartee, and acute in her remarks; irrascible, obstinate and perverse, always upon the lookout to annoy the other patients, and render them dissatisfied with their situation or attendants; sarcastic, and a great disposition to turn every thing into ridicule. Affection for relatives and former home destroyed. In conversation it appeared as though her faculties were too active, and not obedient to the will, for after running on in the most extravagant strain for some time, uninterrupted only by bursts of laughter, upon being remonstrated with, she would reply, "Well, what shall I do? I cannot help it; when I once begin, I cannot stop."

During most of the time, she enjoyed the liberty of the house and grounds, and was in the habit of riding or walking out whenever the weather permitted; and generally attended at a place of worship weekly.

From the first of March, 1832, up to the sixth of January, 1835, when she was taken with her last sickness, she was sufficiently indisposed to be confined to her bed but three or four times, all the attacks being similar in character, and lasting from four to ten days. The menstrual secretion was always inordinate, the quantity being large, and the period of exemption from the discharge never exceeding three weeks, and seldom more than two.

January 6th, 1835.—This attack commenced as all her former ones. For several days previous to her being confined to her room, she was unusually fretful and ill-natured to all her female companions, constantly moving about the house, and finding fault with every thing around her. The same absence of propriety when in the presence of men, which characterized her former attacks. Head too warm, pulse

quick, tongue thickly coated, nausea, breath highly offensive, no pain, no cough. Ordered mass. ex hydrarg. gr. v., magnes. ust., carb. lign. āā. ℥ss; a tea-spoonful every two hours, until it operates freely; stimulating pediluvium at night; diet, gruel.

8*th.*—Back of head hot, tongue coated with yellowish fur, breath very offensive, pulse about 90 and soft; no symptom of pain; consciousness apparently unimpaired, but she refuses to speak when questioned respecting her feelings; bowels costive; skin hot and dry. Ordered v. s. ℥x.; and if febrile symptoms are not allayed, cup over stomach; mass cærulean, gr. v., followed by ol ricini, ℥ss.

10*th.* Has not spoken since first taken to her bed, and it is impossible to obtain any information other than that revealed by external signs; refuses all food and medicine; head cooler, and general temperature of body lowered; pulse, tongue, &c., as before; sleep disturbed. Ordered pulv. ipecac. ℥ss.; after its operation, solution of salts in infusion of senna.

15*th.*—Still the same. Head hot, especially the posterior part; tongue heavily coated, and the mouth and fauces blocked up with a tough mucous secretion, which she makes no effort to discharge. Breathing hurried, and breath so offensive that it taints the atmosphere of the whole room; bowels costive. Upon percussion, the infra mammary portion of the right lung gives a dull, flat sound, and respiratory murmur is indistinct; no cough. Although her strength appears but little impaired, she hardly moves herself, but remains in the position in which she is placed. Ordered cups to back of head and between the shoulders, and give calomel gr. vi. in ol. ricini ℥ss.; give her milk by means of stomach tube.

18*th.*—No change to note, except that she spoke to-day in her usual tone and manner to one of her female attendants, but refused to give any account of her feelings; keep bowels soluble, and apply a flannel wet with spts. terebinth. over the chest. Diet as before.

20*th.* Patient appears conscious of every thing said to, and going on around her, but still refuses to speak, or in any way to communicate her feelings; refuses food and medicine, which are obliged to be forced upon her; will not open her mouth to exhibit the state of her tongue, which is loaded with a thick coat, aud the fauces almost blocked up with a glairy tenacious secretion, which she makes no effort to dislodge; breath highly offensive; pulse quick; head hot; skin dry and husky; breathing short and hurried; bowels have been open. Within the last twelve hours she has discharged from the lungs about half a pint of an exceedingly offensive mixture of pus and mucus. With this is the first appearance of cough, which is slight, amounting to

little more than "clearing up." There is a red spot in each cheek, and other symptoms of hectic developed. Ordered bowels to be opened with ol. ricini, ℥ss., followed by mild enema; the surface sponged with vinegar and water, and an issue opened below the right clavicle.

22*nd.* Less difficult to manage, but will not take any thing voluntarily; sputa considerable, the character the same; pulse quick and wiry; bowels open; tongue thickly coated as before; stomach tender upon pressure; issue beginning to discharge. Apply cups over stomach; continue sponging; give sulph. morph. gr. ss. at bed time; diet, gruel.

24*th.*—Patient is rapidly becoming worse; high continued fever, with a slight hacking cough; expectoration much diminished; head too warm; skin hot and dry; pulse quick and corded; tongue coated; breath less offensive; bowels regular without medicine; takes nothing without compulsion, and neither speaks nor moves voluntarily; sleeps but little; eye mostly fixed; breathing easy, and she is apparently without pain; emaciation going on rapidly; issue discharges well. Give gruel as before, and a table-spoonful of neutral mixture, containing sulph. morph. gr. $\frac{1}{12}$, and tart. antimon. gr. $\frac{1}{16}$, every two hours.

26*th.*—Fever has very much subsided since the exhibition of mixture as ordered; cough and expectoration much diminished; pulse quick and feeble; tongue shows a disposition to clean along the edges; breath nearly free of fetor; bowels regularly opened every twenty-four hours, without the use of medicine; discharges healthy; strength much prostrated. Ordered, continue mixture as before. Diet, panada.

27*th.*—Continues emaciating and losing strength; febrile symptoms much diminished; skin cool; pulse quick and feeble; cough and expectoration nearly gone. She has become much more willing to take her medicines and nourishment. Effusion appears to be taking place in right lung. Ordered a table-spoonful of decoct. senegæ every two hours, alternating with the neutral mixture.

28*th.*—Refuses all medicine, though apparently conscious of her extreme illness, but takes nourishment voluntarily; diarrhœa has come on; pulse very weak; breathing hurried and laborious; countenance indicative of complete consciousness and self-possession. Ordered tinct. opii, gts. xxx. in enema. Apply dry cups over the chest, and a blister between the shoulders. Give chicken broth and wine whey.

29*th.* Patient continued sinking until about 11 o'clock, when she expired, having never spoken but once since first taken.

Autopsy, by Drs. Trimble and M'Crea.—Head. Cranium natural in thickness and density; dura mater natural and healthy; vessels of pia mater and tunica arachnoidea slightly injected, and the membranes reddened; about four ounces of serum effused between the dura and pia mater. Cerebrum, healthy and natural in its appearance; cerebellum, vessels enlarged and engorged, and the posterior inferior portion softened. Pons varolii natural; lateral sinuses distended with coagulated blood.

Chest. Heart natural in size, and healthy. Right lung firmly attached by dense and apparently old adhesions to the side and front of chest; left lung free from adhesions; both lungs highly diseased; inflammation general throughout the whole parenchyma, excepting the upper lobe of right lung; all the lower, and part of the upper lobe of the left lung hepatized; mucous membrane of the bronchi injected, and effusion in the smaller ramifications; no appearance of tubercles or abscess, and no part of the lung gangrenous.

Abdomen. Stomach, mucous coat reddened in patches, and softened; liver hypertrophied, one-third larger than usual size. Other abdominal viscera healthy.

Pelvis. Uterus, parietes thickened, and the substance unusually firm and dense, resembling cartilage; ovaries irregularly enlarged and highly inflamed, one-half of the right one of a dark brown colour, and gangrenous; bladder healthy.

Observations.—Numerous instances are already upon record where disease of the cerebellum has so far aggravated the impulses of sensual appetite, that even in females of the nicest chastity, and most virtuous education, the barriers of modesty and propriety have been broken down, and the unhappy victim given painful evidence that the animal propensities have escaped from the control of reason, and triumphed over the purity of the sane mind. The case of this unfortunate lady adds another to the list. It should ever be borne in remembrance that the conduct of those, thus unfortunately diseased, is no evidence of depraved morals, or of an originally polluted imagination. The state of the uterus and ovaries exhibits the cause of the pain in the side and lumbar region, of which, she frequently complained. The inflammation in these organs was posterior to, and sympathetic with, that of the cerebellum; but being once established, the two were reciprocally maintained. How far the unwillingness to move, speak, or swallow food, was connected with the disease of the cerebellum, it is impossible to decide; but it may be remarked that her resistance to each was always passive.

Case III. *Moral Insanity—Duration several years—Death—Autopsy.* C. F. æt. 70, of Philadelphia, was admitted in November, 1834. She had been, for several years previously, a faithful domestic in the family of ———. Disposition naturally kind and amiable; habits persevering, industrious, and frugal; by mere dint of economy she had saved from two to three thousand dollars. The first evidence of disease noticed, was a carelessness about money matters, which soon amounted to indifference. Not long after this change, her feelings toward her fellow servants became perverted; she frequently reprimanded and abused them without cause. In the presence of superiors, she often used rude language, and behaved in various ways very unbecomingly; disrespect was soon converted into hatred, which she acknowledged with pain to the family. Finally she begged her protectors to secure her in a place of safety, lest she should commit against them some dark deed of violence, which she at times harboured in her breast. They, not believing she was crazy, reluctantly granted the request.

June 12th, 1835. Emaciation advanced; muscles flabby; skin of a pale straw colour; hair fine gray; eyes hazel; countenance sane; sleeps well; heat of scalp normal; cheeks sunken; no cephalalgy; pupils natural; tongue red, rough, moist, clean; breath offensive; appetite variable; bowels loose; nutrition impaired; has abdominal tenderness; respiration easy; right side of chest too resonant on percussion; pulse about 75, soft, weak. Obstinate, impatient, impious, suspicious. She expresses her wants in a commanding tone; shows no gratitude for favours conferred. Refuses to take food willingly. Diet farinaceous.

July 17th. Sleeps soundly; heat of scalp natural; pupils contracted; tongue red, dryish; pulse 80; skin harsh; feet warm. She either eats voraciously or entirely refuses food; from which cause she suffers frequent attacks of diarrhœa, which are controlled by attention to diet, or by taking small portions of pil. hyd. and opii.

27th. Yesterday dysenteric symptoms were induced, by eating animal food; they were overcome by throwing into the rectum sulp. morph. gr. i.

Aug. 4th. She is much exhausted by an attack of vomiting and purging, which came on yesterday, and continued for several hours. Scalp warm; feet cold; tongue red, dry; face pale; pulse very weak, and frequent; cheeks sunken; pupils contracted; heart's motion indistinct; respiration hurried; ends of the nails crisp, and of a dull colour; abdomen more tender to pressure; has frequent bloody and mucous

discharges from the bowels. Ordered sulp. morph. gr. i. to be frequently thrown into the rectum.

5th. The dysentery continues; drowsy; face pale, cadaverous; mouth opened; lower jaw depressed; respiration short, hurried; skin of hands and feet cold, bluish; pulse scarcely perceptible; pupils much contracted; very restless; importunate for cold drinks; eye-lids drooping. She remained in this state for 12 hours, when she calmly died. Her consciousness was good, nearly up to the time of dissolution; the pupils were contracted till the moment of death, when they became greatly dilated.

Autopsy, fifteen hours after death. Exterior; great emaciation, skin a pale straw colour, pupils smaller than at the moment of death. Scalp thin, temporal muscle wasted to a mere layer, dry. *Cranium* thin, internal table diminished; *dura mater* strongly adherent to the cranium, thickness increased, vascularity about average, little blood in longitudinal sinus. At the base of the brain ℥i. of bloody serum. *Arachnoid* normal. *Pia mater* slightly adherent to the cortical substance; injection moderate. Colour of cortical substance of a dull ash, consistency lessened, not pulpy; medullary portion softened exteriorly; bloody points followed longitudinal sections; by pressure their surfaces soon became coloured; fornix rather softened; corpora striata pale externally; thalami normal; ventricles contained ℥vi. of limpid serum; pyramidal bodies, together with surrounding parts, normal. *Cerebellum* firm.

Chest.—Pectoral portions of ribs ossified. *Lungs* free, crepitant, no tubercles; vesicular emphysema seen over the surface of both lungs. Mucous membrane of bronchi, normal. Heart small, left ventricle increased in thickness and weight, its cavity lessened; valves healthy.

Stomach distended, contained half a pint of yellowish fluid; mucous membrane, near the cardiac region, of a dark red colour, easily raised in strips from a fourth to half an inch in length; greater curvature free from injection, of a dull white colour, consistency good; near the pylorus, mucous membrane reddened and thickened. *Small intestine* externally injected, contained yellowish fluid; mucous coat here and there, throughout its whole extent, injected and thickened; *large intestine*, the mucous membrane in some places thickened, injected, softened, ulcerated or destroyed. *Liver*, size natural, colour externally normal, acini redder than usual. *Gall-bladder* distended with bile. *Pancreas*, size natural, density increased. *Kidneys* firm, normal; ovaries small, hard, compact. *Uterus*, internal structure pale, very compact.

Remarks. *First.*—We are aware of the uncertainty of inferences

drawn from individual dissections; but the condition of the fornix, in the brain of C. F.; of the cortical and medullary structures, together with the injected state of the same, opposes strongly the assumption, that insanity is essentially a *mental affection.* If the brain is the organ of the mind, as is very generally admitted, we cannot conceive how the latter can become deranged without pre-existing disease in the former. The fact that organic changes are often discovered in distant parts, as well as in the brains of the insane, no more authorizes the belief, that they are of equal importance in the causation of insanity, than do the frequent intestinal lesions observed in phthisis, prove that they are as intimately concerned in the production of consumption, as the pulmonary alterations themselves.

Second.—The lesions found in the stomach and bowels of case III. were doubtless the immediate cause of her death. Insane persons are much disposed to diarrhœa, which at first is easily managed; but as the case is protracted the intestinal inflammation becomes aggravated, and extending downwards, gives rise to dysenteric symptoms, which sooner or later carry off the patient. Dissection, in such cases, very generally demonstrates, that the disease commenced in the small intestines, extended downwards towards the colon, and terminated in softening or ulceration of its mucous membrane. In illustration of the susceptibility of the insane to intestinal inflammation, we remark, that M. Scipio Pinel reported, that in 269 dissections of lunatics, gastro-enteritic inflammation occurred in 51. The reports of the French Lunatic Hospitals, for 1832–3 and 4, ascribed 306 deaths out of 1091, to abdominal inflammations.

Case IV. *Moral Insanity. Duration three months. Second attack. Paternally constitutional.* Mr. ——, of Md., was admitted on the 8th of June, 1836. In the summer of 1832 he was observed to be more than usually restless, discontented, and at times "melancholy." These changes of disposition were attributed to "nervousness," or to a morbid "imagination," rather than to cerebral disease; consequently, medical aid was not deemed necessary till the spring of 1833; by which time he had become "maniacal," and had made several attempts at suicide. During the incubation of the disease he injured the digestive powers, by an excessive use of medicines, taken for imaginary diseases. This attack was overcome at the Asylum, by the use of the lancet, cups, blisters and tonics. In 1834 and 5, he took a tour of pleasure through England, France and Italy, during which he conducted himself and his affairs to the satisfaction of his friends. On returning home, having no regular business to pursue, he spent most of the time in-doors, reading a few favourite authors.

By constant indulgence the sedentary habits increased, till every duty, requiring corporeal exercise, was disrelished; at the same time he became more and more reserved towards friends, and shortly after all company was studiously avoided. As the disease advanced the fidelity of friends was questioned, and their love repulsed. Fixed delusions now appeared; he thought that he had committed some heinous offence against society, and that he was shortly to be arraigned before a tribunal of justice, to receive condign punishment.

He was submitted to a depleting course of medicine, which lessened the violence of the disease, and converted it into moral insanity; for at the time of his admission there were no delusions of the understanding.

June 11*th. Present state.*—Stature large, lean; head small; hair red; eyes black; muscles wasted, flabby; motion quick. Sleeps well; no cephalalgy; hair dry, scalp loose; pulsation of temporal arteries weak, regular, 104; pupils sensible; countenance mirthful, face exsanguineous; lips, gums, tongue pale; appetite strong; food relished; digestion regular, no abdominal tenderness; chest, anteriorly very resonant on percussion; heart's motion quick, weak; radial artery 100, weak, small; hands and feet cold. Excessively joyous and merry, acts by impulses without consideration, abounds in comic gestures and antic motions of the body; prodigal in gifts; destroys and soils his clothes; turns every thing in his room topsy-turvy; affection for friends suspended. Ordered full diet, and carb. ferri. ℈ss. t. d.

20*th.* Sleeps well; heat of scalp normal, greater than that of the hands and feet; pulse in temporal artery quick, soft, 108; lips and tongue pale; pupils sensible; adnata yellow; feet swollen, of a white waxen colour; radial arteries 108, weak, soft; appetite much increased; bowels regular. "More crazy in actions than in words;" when addressed distorts the face, hems, coughs and laughs, then answers correctly; gave a minute and rational history of his travels; indisposed to mental labour. Takes freely bodily exercise in the open air.

27*th.* Heat of scalp increased; no cephalalgy; pulse in temporal arteries 90; external capillaries filling up with red blood; appetite voracious; nutrition active; rapidly increasing in flesh; countenance at times more grave; more careful of dress; requested that the furniture of his room might be replaced; actions less comical; attention more easily fixed; answers more prompt; less lavish in gifts; the disposition to excessive merriment much diminished.

July 1*st.* Yesterday after having eaten too freely of fruit, his stomach became disordered, pulse excited, skin hot; again he indulged

in all former frivolities and irregularities. Ordered all medicines to be stopped; his diet to be farinaceous.

4*th.* No cephalalgy; hair dry; scalp loose, heat augmented at the sides and behind; pupils natural; countenance more composed; temporal arteries turgid, pulsation weak, regular, 88; face, tongue and lips more pale; some diarrhœa; appetite again voracious; continues to increase in flesh; heart's motion regular, 88, strong; pulse in radial artery weak. The love of order returned; attentive to personal appearance; affection for friends begins to show itself; trifles no longer cause fits of merriment; general carriage much more regular. Ordered the iron to be resumed.

13*th.* Though carefully watched he often overloads his stomach, from which circumstance he has occasionally wakefulness at nights. No pain in head; temporal pulse weak, regular, 104; face pale; lips redder; appetite not so great; no abdominal tenderness; heart's motion strong, over 100; radial pulse weak. During the last week his conduct has been more trifling; disposed to pick up and secrete various articles; still attentive to personal appearance; occasionally yields to all his former ludicrous impulses. Ordered ℥v. of blood to be taken from occiput.

15*th.* The iron has been gradually increased, from ℈ss. to ʒi. t. d.

23*d.* Not so well; manifests great versatility of thought and action.

Aug. 12*th.* Sleeps soundly, no cephalalgy; skin of forehead soft; temporal and radial arteries 92, regular, strong; tongue clean, appetite voracious, has increased very much in flesh; external capillaries filled with red blood; no abdominal tenderness; bowels regular; heart's motion strong, about 92. Manners dignified, general conduct unexceptionable; enjoys himself by reading, and riding, and walking about the country. Saw his brother—was anxious to return home.

Sept. 6*th.* Sleeps well; hair dry, scalp loose, heat normal; temporal and radial arteries 84, strong; adnata normal; face ruddy; tongue healthy; appetite not so strong; bowels regular; skin of hands and feet warm, colour natural; heart's motion full, active, 84. He expresses regret over past irregularities; and fears lest they should be attributed to perverseness of character, rather than to disease.

24*th.* Discharged, well.*

Remarks.—*First.* That there was in this case a deficiency in quantity and in quality of red and healthy blood, was inferred from the emaciation, from the exsanguineous state of the external capillaries, of

* Since then we have heard by rumour that he had committed suicide.

the lips, tongue and skin—from the increased motion of the heart and arteries, and from the enfeebled condition of the same.

Second. All of these symptoms, together with the diseased manifestations of the mind, were referable to an attenuated state of the blood; because, just in proportion to the activity of nutrition, the capillaries filled with red blood, the force of the heart and arteries increased, the frequency of their pulsations diminished, and the moral phenomena approached toward a healthy standard.

Third. It is worthy of particular attention that when, in the above case, the usual quantity of food was withheld, as it was upon the supervention of fever, or when its assimilation was prevented by diarrhœa, the pulsations of the heart and arteries were augmented; and the moral signs were more perverted, and they continued so sometime after the subsidence of the fever and diarrhœa.

Fourth. The want of indications for the treatment of insanity has been universally acknowledged; but in similar cases to the one just detailed, the *impoverished state of the blood* may be regarded as a very important indication. To change its unhealthy qualities, or to augment its quantity, under such circumstances, we know of no better measures than the liberal use of *iron*, together with full diet and free exercise in the open air. The former not only increases rapidly the appetite and strengthens the powers of assimilation, but under its use red blood is formed faster than by any other tonic with which we are acquainted.

Fifth. Persons once affected with insanity are always liable to relapses; the danger of them is proportional to the number of previous attacks. Each recurrence of the disease renders much less the probability of a permanent cure being effected.

Case V.—*Moral Insanity. Cause, domestic difficulties—duration five years—cured.*—Mrs. ——, ætat 50, of Pennsylvania, was admitted on the 17th of June, 1836. Eight years ago she had for a long while "the chills," afterwards was much troubled with pains in the limbs, and with occasional depression of mind. In 1834 she was greatly harassed with gloomy thoughts and evil forebodings of the future; refused to mingle in the social circle; and shortly after secluded herself from her nearest friends. Nothing now afforded pleasure; religion, which had heretofore supported her under the deepest trials and afflictions, was neglected; despair took possession of her mind, and rendered her unfit to perform the regular duties of life.

Six months before being admitted here she suddenly became joyous and happy; the company of neglected friends was now eagerly sought, and in return she made every preparation at her own house for their

reception, but upon their arrival she invariably retired, and left them to entertain themselves. During this time she slept very little, was often up all night rummaging about the house.

Present state, June 23d. Stature large, muscles flabby; head large, hair dark brown, eyes hazel, complexion dark. Sleeps part of the night; scalp loose, heat increased; pulse in temporal and radial arteries small, weak, about 70; has frontal pain; pupils contracted; adnata bluish; face and tongue exsanguineous; countenance sane; appetite poor; bowels costive; abdomen distended with wind; skin of hands and feet pleasantly warm. She is kind and benevolent to a fault, rejoices that she is not deprived of the "use of her senses," and that "opportunities for doing good are not denied." She intends to teach some of her fellow patients "politeness by example;" to correct the "impudence of others by reproof," while she fears that a third class will be incorrigible; very loquacious, communicative and versatile; conjugal and maternal affection suspended. Cupped ℥v. from occiput.

27th. Sleeps better; has frequent frontal pain; scalp hot before and behind, hair dry, ears translucent, face pale; temporal and radial arteries 68, regular; tongue pale, moist; bowels regulated by magnesia; appetite middling; heart's motion slow, regular, 68; troubled with flatulence; skin of hands and feet warm. Regardless of personal appearance, unsteady in all pursuits; always doing, yet never accomplishes any thing; much less generous; gathers up all the trash she finds, and carefully deposits it in her room; she secretes thread, needles, thimbles, and all such articles, about her person and in her chamber. Cupped ℥vij. from occiput.

July 6th. Sleeps well; some pain in head; heat of scalp increased; eyebrows drawn up; appetite better; heart's motion about 70, regular; skin hot, no abdominal tenderness. Her carelessness and vacillation remind us of a child, while in fondness for telling oft-repeated stories she resembles one of old age. If a book is taken up, before the first half page is glanced over it is exchanged for drawing materials; these are very soon laid aside, and the needle is taken up; this soon fatigues her, and is also thrown down or exchanged for something else. Her whole time is spent in this unprofitable and vacillating manner.

12th. A few days since she saw her friends—no unusual excitement followed. The propensity to secrete things continues so active, that it is necessary to have a general search once a week in her room, for lost silk, ribands, capes, scissors, thimbles, &c. &c.

Aug. 15th. Sleeps very soundly; hair soft; skin of hands and feet warm; temporal arteries turgid, 68; heat of scalp augmented before and behind; tongue clean; appetite very strong; nutrition active;

increasing rapidly in flesh; external capillaries filling up with red blood. Still very unsteady; the propensity to pick up and to conceal whatever pleases her fancy, remains active; when confined to her room for improper conduct becomes insolent and boisterous.

Sept. 20th. Has frontal pain; heat of scalp increased; sleeps soundly; temporal and radial arteries strong, regular, 68; pupils natural; countenance sane; tongue red, clean; appetite voracious; bowels regular; no abdominal tenderness; nutrition active; feet comfortable. Much more careful of personal appearance; less talkative; she now loves and practises order; her room is no longer the repository of the refuse, or of the property of others; more steady in all pursuits; less benevolent and kind; regrets over the past. Cupped ℥vi.

27th. On the night of the 25th inst. she did not sleep one hour. Since then, more loquacious and vacillating; temporal arteries small, turgid; some pain in forehead; scalp too warm behind; appetite very strong; bowels regular; tongue red, moist; nutrition healthy; heart's motion regular, about 68; no abdominal tenderness; radial pulse small, 68. Irritable, captious, and cannot bear reproof. The iron has been gradually increased from ℈ss. to ʒi. t. d. Ordered ℥xiv. of blood to be taken from the head.

After being cupped is relieved of cephalalgy for several days.

Oct. 17th. Sleeps well; troubled occasionally with pain in the head; temporal artery 64, turgid; tongue red; bowels regular; has increased very much in flesh; appetite enormous; radial pulse 64, strong. Anxious to return home; all childish pursuits abandoned; follows steadily every employment she undertakes; temper remains irritable and captious. Cupped ℥vii.

Nov. 1st. Troubled with frontal pain; radial arteries about 70; tongue clean; digestion regular. She behaves with the utmost propriety.

29th. She has taken no medicine for two weeks. *Discharged well.*

Remarks. *First.* The commencement of moral insanity is often so insidious as to be unnoted for years by the friends of the patient, or if marked, the changes in disposition, habits and temper are attributed to the occurrence of some external cause. It is not, therefore, until these mental variations are frequently exhibited, or until they are observed by strangers, that the friends will admit the existence of mental derangement. But the admission being made, many circumstances, at first overlooked or forgotten, are recalled, which make the probable duration of the disease much longer than was originally suspected.

Second. This ignorance of the true nature of moral insanity, or

of its incubation, is frequently productive of the worst consequences, inasmuch as the disease is liable to be rendered, by long continuance, intractable to therapeutic measures.

Third. It is a maxim very generally admitted, that the duration of insanity, *cæteris paribus*, has more influence upon its ultimate termination than any other individual circumstance.

Fourth. The paleness of the external capillaries, of the tongue, lips and skin, in Case V. were indicative of a deficiency of red blood in the system; which was restored by the use of iron, and full diet. The former had to be suspended several times, on account of the frequent recurrence of pain in the frontal region. When pain is present its removal should almost constantly be attempted by the application of cups; especially if it is accompanied with an increase of heat in the scalp, as it was in the last case. Pain is commonly attended with an aggravation of the mental symptoms, which are likewise improved by the topical loss of blood.

ART. VII. *Case of delivery of a Fœtus through the abdominal parietes.* By S. H. HARRIS, M. D., of Clarksville, Virginia.

The following case is one, in some respects, so singular as to merit in my opinion a notice in your useful Journal. I hold it to be the duty of the practitioner to submit for publication, a fair and candid history of every case which may fall under his observation, calculated in any way to benefit the science. The medical profession has been deprived of many useful facts by the negligence of country practitioners in not reporting rare and extraordinary cases, many of which come under their observation, and are soon forgotten or resigned to the gossips of the neighbourhood, to swell the catalogue of traditionary wonders.

As I neglected to take notes during the progress of the following case, I am unable to make a very full report. Its general history, however, will no doubt be deemed sufficient.

On the 11th day of November last, I was called to a negro woman residing in the village, who was labouring under uterine hemorrhage. She was about thirty-five years of age, of robust constitution, and the mother of six living children. According to her own calculation she was in the eighth month of pregnancy. A few days before while making up a bed she had been suddenly seized with pain in the abdomen, which was soon followed by a slight discharge of blood from the

uterus. The pain and hemorrhage frequently recurred, but was not so severe as to prevent her from attending to her usual employment until the evening I was called in. The hemorrhage at this time was somewhat alarming and the pain very distressing, though confined chiefly to one side of the abdomen. As she was of a plethoric habit, and her pulse full and strong, I bled her freely, and gave two grains of the acetate of lead, with the quarter of a grain of opium, every half hour, and directed the application of cold cloths to the region of the pubis. After continuing this course for six hours the flooding diminished, but the pain continued without any amendment. I bled her again to the extent, probably, of sixteen ounces, and continued the acetate of lead and opium at longer intervals; some laxative was likewise given, and the cold applications kept applied. Twenty-four hours expired without any material change in her situation, except that the abdomen became more painful to the touch, and the breasts somewhat tumid and tender. The flooding was not at this time profuse, but its continuance induced me to believe that delivery would soon take place. She was again bled twelve ounces, and the acetate of lead and opium discontinued; the cold applications were used only occasionally. After waiting perhaps twenty-four hours I made an examination of the os uteri, and found it not larger than a twelve and a half cent piece, and very rigid. The finger instead of passing through a circular opening with thin edges, as at the full period of utero-gestation, passed through a narrow channel of more than an inch in length. It was evident, therefore, that the neck of the womb had not yet expanded. I could distinctly feel the head of the child through the membranes, but the placenta was no where in reach. After thus satisfying myself that it was not a placental presentation, and that the rigid state of the os uteri forbid the administration of ergot, I introduced the tampon, gave fifty drops of laudanum, and left the patient for twenty-four hours. I will mention by the way, that up to this time and during the progress of the case afterwards, her bowels were evacuated daily by some laxative medicine or mild injections. The opiate procured some sleep, but it had not changed in any respect the general aspect of the case. The os uteri remained rigid and unyielding, and the pain incessant, without appearing to act in the slightest degree on the contents of the uterus. The flooding continued, and though not profuse, its constancy began to weaken the patient, and excite some anxiety in my mind, as to its final result. About this time (between three and four days after I commenced treating the case) the tension and soreness of the breast subsided, and she no longer felt the motion of the child. The liquor amnii had likewise been dis-

charged. These evidences of the death of the fœtus were soon confirmed by the offensive character of the discharges. The pain appeared to be fixed at this time in the left hypochondriac region, and remained stationary for many successive days. Her respiration was from the first somewhat obstructed by an accumulation of frothy mucus in the bronchi. This symptom continued throughout, and was a source of great distress and uneasiness.

It would be impossible for me to give any thing like a detailed history of the case, or its treatment, for the next twenty days. Various conjectures arose in my mind during this time, in regard to the nature of the case, and the causes which probably retarded the expulsion of the fœtus. The equivocal character of the symptoms, however, prevented my arriving at any positive conclusion. The possibility that the uterus might be ruptured, certainly occurred to my mind, but such a conjecture was unsupported by the symptoms; and even if I had been irresistibly led to this conclusion, the circumstances of the case would not have justified a forcible entry into the uterus. The operation of gastrotomy would have been equally rash. The placenta came away about the twelfth day of her confinement, partially putrid. The ergot was afterwards administered in scruple doses, but the stomach rejected it immediately. Repeated efforts were made to dilate the os uteri, but no force, prudent to use, could overcome its rigidity. Large doses of opium were given, but it produced no effect, other than a mere temporary respite from pain. A small blunt hook was cautiously introduced into the womb, to try if possible and break down the bones of the cranium, but their firmness bid defiance to such a feeble instrument. After being thus defeated in all my attempts to deliver her, little else was done for many days but to examine occasionally the os uteri, give opiates, mild tonics, and use such injections, per vaginam, as were best calculated to correct the offensive nature of the discharges. Though harassed and debilitated by pain and the loss of blood, the patient's pulse remained firm and her appetite tolerably good; and yet a situation, apparently more hopeless and wretched, cannot well be imagined. That sympathy, however, which never yet slumbered around the bed of travail, was particularly active on this occasion. Nothing indeed was left untried, which benevolence or zeal could suggest, to alleviate her sufferings or inspire her with courage.

About the 10th of December the nurse called my attention to a small circumscribed tumour about the size of a chesnut, a little below the umbilicus to the right of the linea alba. I will remark that for six or eight days previous to this time, the pain seemed to be confined

chiefly to this part of the abdomen. The tumour felt very soft and communicated to the touch a sense of fluctuation. At its base there could be distinctly traced a muscular ring, very hard and rather more than half an inch in diameter. Gentle pressure on the tumour did not appear to give much pain, but when the end of the finger was forced into the ring she complained of excessive pain. The moment I saw and examined this tumour, I felt satisfied that there was a solution of continuity of the uterus, and that the fœtus was making its way to the surface. The subsequent history of the case will prove that my opinion was well founded. The woman's general health had not suffered as much up to this time as might have been expected. Though very much emaciated, her strength had rather improved under the influence of the tonics, and the generous diet that was allowed. Her pulse, though quick and irritable, indicated no disposition to sink. Under these circumstances I determined to postpone, for a few days at least, any operation that might be deemed necessary for the safety of the woman. Large emollient poultices were kept constantly applied to the abdomen. On the 13th, three days after the tumour was first discovered, it was considerably enlarged, and the muscular opening or ring, at its base, probably two inches in diameter. A consultation was requested, and Dr. Singleton of the adjoining county was called in, when it was agreed to open the tumour. This operation I performed with a common abscess lancet. A slight incision was made into the apex of the tumour, when about half a pint of thin grayish matter issued, together with a portion of gas, which filled the room with a very offensive odour. A probe was introduced which soon met with resistance, so as to leave no doubt on our minds but that the fœtus was fast approaching the surface. It was deemed prudent, however, to defer any farther attempts to extract it until the morning. On the 14th, the incision was enlarged, the muscular ring having expanded in the mean time so as to admit the hand. The putrid mass was then drawn to the opening by means of forceps and a small blunt hook, so as to enable me to grasp it with my right hand; this I readily accomplished, and by using moderate force extracted the entire body. The bones of the cranium, however, were left behind, and increased very much the difficulties of the operation. I was under the necessity of introducing my hand through the incision down into the body of the uterus, so as to separate the bones and bring them away in pieces.* Mild soap suds was then injected through the in-

* Judging from the size of the body and the bones of the cranium, I am disposed to think that the fœtus was between seven and eight months old.

cision into the uterus, followed up by a pretty strong decoction of Peruvian bark. The edges of the incision were then drawn together and confined by long straps of adhesive plaster; tight dressings were applied and a wide bandage drawn around the abdomen, after which a large opiate was given, and the poor woman left to enjoy, for the first time in four weeks, a quiet slumber. The discharge from the opening was very profuse and offensive for several days, the injections, however, were repeated every morning, and for several successive days large poultices were applied, made of charcoal and Peruvian bark in equal quantities. The tonics and opiates were still continued with a liberal allowance of nutricious food. Under this treatment healthy granulations soon made their appearance, and the incision healed up entirely in about five weeks. While the healing process was going on, I could at any time distinctly see the lining membrane of the uterus in the bottom of the wound; and could with perfect facility introduce my finger into the cavity of that organ.

Remarks on the preceding case by the EDITOR.

The preceding neatly drawn up case is a very interesting and extremely rare one. The records of medicine, it is true, furnish numerous examples of the discharge of fœtuses through openings formed in different portions of the intestines, perineum, vagina, or abdominal parietes, but in nearly all such instances the fœtus was originally extra uterine, or had escaped into the abdominal cavity through a rupture of the uterus formed during labour. In the case related by our correspondent, on the contrary, the fœtus remained within the uterine cavity until discharged. The dead child acting as a foreign body, must have excited first irritation and inflammation in the anterior portion of the uterus, which, extending to the abdominal parietes, caused adhesion between these two parts; suppuration and ulceration followed, and an opening was thus formed into the uterine cavity through which the fœtus passed.

We know of but two other similar examples on record, and in neither of them is the evidence of the fœtus having remained in the cavity of the uterus until discharged, so complete as in that related by Dr. Harris. One of the cases we have just alluded to, occurred in the practice of Dr. Muller, and has been already laid before our readers. See vol. iv. p. 512, of this Journal. The other was communicated to

the Royal Medical Society of Copenhagen in 1833, by Kjär, district surgeon at Holstebroe in Jutland.

We extract the following notice of this case from a recent number of the Medico-Chirurgical Review.

"In the summer of 1827, a woman ætat 39, in her fifth pregnancy, experienced violent pains in the abdomen whenever the child moved, and the fear of approaching abortion induced her on several occasions to call in a midwife, who, after examination, declared her to be not pregnant. About the middle of December, when she had calculated that her confinement would take place, the ignorant midwife declared that no pregnancy existed, although the movements of the child could be seen and felt, and affirming that the good woman was certainly bewitched, she finally left her to her fate.

"For several days the violent movements of the child were still felt, after which they ceased altogether. The poor woman lay in the greatest torment, shrieking with pain, and it was necessary to hold her in bed. The abdomen was excessively distended, and so sensitive, that even the weight of the bedclothes was unbearable. It was eight weeks after this that she was examined by a physician, who brought away a fleshy mass which was considered to be a portion of the placenta: nothing more was done. In the course of five weeks she was able to leave her bed; in the spring she could walk a little out of the house, and a quarter of a year after the cessation of the movements of the child, the catamenia appeared: she, however, felt weak and poorly throughout the whole of the following summer and winter. About the latter end of the succeeding spring, a tumour formed below the umbilicus, and gradually attained the size of a goose's egg; it was opened by a pitch plaster in June 1829, and discharged a large quantity of an inodorous fluid. At this time, as the writer afterwards learned, a piece of flesh closed the opening, and was taken away, upon which was observed something resembling a navel-string. The belly collapsed, but again became distended, and the opening healed up. In six weeks it again broke out, and gave issue to thick and highly offensive fluid, the discharge of which was not followed by a diminution of the abdominal distension. On the 26th of September, the patient was visited by the writer, who found her in bed in a state of exhaustion, with a quick, full pulse and dry tongue, the bowels confined, and micturition difficult, the wound was painful, and she complained of nausea, which occasionally amounted to vomiting, in consequence of the excessively offensive smell of the discharge.

"The abdomen was hard, sensitive, and uniformly distended, the opening below the umbilicus large enough to admit a sixpence (zweigroschenstück,) and protruding through it, a macerated mass covered with hair. Herr Kjär having removed this substance with the scissors, felt within the opening a bone with a jagged edge, and on withdrawing his finger, a large quantity of a thick putrid fluid escaped, and then a mass resembling rancid oil. Nothing unusual was discovered by an examination per vaginam; the crevix uteri, indeed, was rather long, but not at all dilated, and the os tincæ sufficiently open to admit with facility a probe, which, however, could not be introduced into the cavity of the uterus. Herr Kjär resolved to dilate the opening in the abdomen, and the operation was performed on the 4th of October, the patient having been previously removed for the purpose into the town infirmary. At this time she was greatly debilitated. The hands and feet were œdematous, and a successful issue seemed extremely doubtful.

"The patient being placed upon a bed, the operator dilated the opening in the direction of the linea alba to the extent of three inches, resting the scalpel first upon a director, and then upon his finger; the skull of the fœtus, previously opened with Smellie's perforator, was now extracted, and at length, with the

assistance of this instrument and of the scalpel, the rest of the skeleton was removed. There were no traces of the after-birth or navel-string, with the exception of a piece of the latter, an inch and a half in length, which was attached to the umbilicus. The brain and intestines had also totally disappeared. The sac in which the fœtus was contained, was every where adherent to the surrounding structures; its parietes presented several osseous points, and at its lowest part was a kind of thick cartilaginous ring, with a depression in the centre containing a cleft. Much loose and putrid membranous matter was washed out by injections of tepid water, the edges of the wound were then brought together by a suture, and suitable dressings applied. After the operation (which occupied three quarters of an hour,) two grains of musk in powder were administered every two hours, and a dose of a mixtura acida containing musk was given every hour. In the evening the patient complained of thirst and nausea, and the dressings required to be renewed on account of the profuse discharge. On the following days bark with elix. aromat. acid. was taken alternately with a musk mixture, and port wine diluted and warmed injected daily into the sac. Under this treatment the constitutional and local symptoms progressively improved, the vomiting ceased, the wound secreted healthy pus, and on the 13th of October she was able to leave her bed. The patient who for two years, during which she had borne the child, had continued to menstruate, ceased to do so after the operation, until on the 23d of November bleeding from the wound took place. In the evening there was a discharge of blood from the vagina, and at the same time that from the wound diminished. From this period the catamenia recurred at regular intervals through the natural passages. She is now in good health: the wound in the abdomen is still open, though the discharge from it is inconsiderable.

"The writer is of opinion that the fœtus lay in the cavity of the uterus, that the cartilaginous ring at the inferior part of the sac, was nothing else than the cervix uteri, and the depression in it the orificium internum. Several circumstances, he thinks, corroborate this view of the case: from the commencement of the pregnancy, the abdomen was always uniformly distended, behind the sac nothing could be felt but the vertebral column, and after the operation the neck of the uterus ascended, and the os tincæ was firmly closed. The impossibility of birth in the natural way, he attributes to the cartilaginous state of the ring, in consequence of which the inferior part of the uterus was incapable of dilatation.—*Siebold's Journal für Geburtshülfe, Frauenzimmer und Kinderkrankheiten. Band* XV. 1835.

ART. VIII. *Case of severe injury of the Brain terminating favourably.* By M. R. GRISWOLD, M. D., of Goodwynsville, Dinwiddie County, Virginia.

In the August No. of the American Journal of Medical Sciences, is recorded a case of "extensive and deepseated injury of the brain—unattended by any disturbance of the intellect, and terminating favourably." Having had lately (but previously to the receipt of my August No. of the Journal) a case similar in its aspects, and resulting,

under similar treatment, in a like favourable issue, I have thought it might be interesting to give to the public a statement of it, as confirmatory of the astonishing powers of nature, in the reparation of an injury so seemingly threatening of destruction to mind and body.

A son of William H. Jones, of Dinwiddie County, Virginia, aged about 2 years, well grown, fat and healthy, fell from the upper floor of a dwelling house, and clearing the first flight of steps was precipitated with great violence upon one of the sharpened extremities of an old fashioned round-post rush-bottomed chair. The rounded knob of the back chair-post, which received the head of the child, had been whittled away and sharpened to a point, so as to resemble very much in length, shape and size the finger of a large man. This finger-like extremity pierced the child's skull and brain to the extent of about one and a half inches, entering the temporal bone just above the tragus and just in front of the superior helix of the external ear.

After the force of the fall was thus broken, the body of the child lit upon a table that happened to be near. But so firmly transfixed was the head upon the chair-post that it drew the chair over upon the table and retained it there until the father of the child raised the chair and by force extricated the penetrating extremity from the wound it had made.

The substance of the brain was very much broken in upon. A portion of it was found adhering to the chair-post, and other portions were seen protruding from the flesh wound.

I saw the patient in less than hour after the accident. He had lost a considerable quantity of blood from the rupture of the veins of the integuments, and was in a sound, apparently natural sleep. There were no symptoms of compression of the brain and none of concussion, except contraction of pupil and occasional vomiting and disposition to sleep. No treatment was directed at first visit, except rest and the application of lint to the wound. The next day, and for 7 or 8 days succeeding, there was high fever, attended with full, quick pulse, hot surface and great jactitation. Apprehending inflammation of the brain, a rigid antiphlogistic course was commenced and pursued; embracing, in its details, free venesection twice, active purgation daily, and cold applications to shaven scalp as indicated by excess of temperature there.

After the fever subsided, the wound which had been kept open all along by pledgets of lint, suppurated freely. This suppuration was promoted by appropriate dressings. The wound is now completely healed. The injury to the cranium and to the brain within appears

to have been repaired by the inherent recuperative energies of the system. The portion of brain exterior to the skull, in part, sloughed away piecemeal, and in part discharged from the suppurating wound in the form of ichor or thin milk-like fluid.

Whether in older persons the "vis medicatrix naturæ" would accomplish so much, is a question I will not take upon myself to answer.

The child at this time is in perfect health, and in every respect, in good condition. There is no appreciable impairment of the intellectual faculties, nor was there any during the treatment.

Goodwinsville, Dinwiddie county, Va., September 28, 1836.

ART. IX. *Observations on Spinal Irritation and Inflammation.* By SAMUEL ANNAN, M. D., of Baltimore.

e important part performed by the spinal chord in the diversifi[ca]rms of morbid action to which the human body is liable, has of late [ye]ars attracted more attention than at any former period. It is not, [ho]wever, entirely a modern discovery. Fernelius, Morgagni, Lieutaud, and Valsalva, and others of less reputation, have given us the results of their observations; and Dr. Frank published at Pavia, in 1791, an admirable dissertation, "De Vertebralis Columnæ in Morbis Dignitate." In 1808, Dr. James Saunders, of Edinburgh, in his lectures on the Practice of Medicine, taught, that an abnormal condition of the spinal chord, was the chief agent in the production of many of the most prominent symptoms of several diseases. Like most men, who believe they have the merit of originality, even if it is only for an extension of views previously entertained, he applied his doctrines to the greater number of cases presented to his inspection. But it was the different varieties of fever, which more particularly arrested his attention; and neither Clutterbuck nor Broussais, nor Louis, are more fully convinced of the truth of their respective theories, than he was, that spinal irritation and inflammation are the cause of fever. In all fatal cases, morbid appearances were perceptible in the spinal canal; and it was inferred, that they had been the *cause* of the phenomena which preceded death.

In 1828, Dr. Saunders published a paper on Gout, in the Edinburgh Medical and Surgical Journal, where he contends that he has proved by his dissertations, that there is no part not occasionally in a sound

condition, except the centre of the nervous system; and that disease of this part is the only morbid state essential to gout. In the most common or regular form of gout, the lumbar and sacral nerves are the first disturbed, involving the inferior extremities, and often simultaneously the bladder and rectum; next the morbid action ascends, involving the kidnies, the liver, stomach, heart, respiratory apparatus, and encephalon, proving that though all parts of the nervous centre may be successively invaded, yet nature points to the inferior portion of the spinal marrow as the most liable.

Tetanus has also been included amongst those diseases supposed to arise from inflammation of the spinal chord or its membranes. The researches of Duchatelet and Martinet, and many others, demonstrate, that a morbid condition of the contents of the spinal canal, is at least a concomitant of this fatal malady. Spinal arachnitis was invariably observed. It was known by turgescence of vessels, producing redness of various shades, thickening, augmented density, and loss of transparency, serous effusion, purulent, sero-purulent, or sero-gelatinous exudation, and formation of false membranes; while in other cases, inflammation and consequent softening of the chord itself have been observed.

More recently Mr. Tate has thought he could trace hysteria with all its diversified symptoms, catalepsy, chorea, and many anomalous cases, to the same region; and Mr. Teale, and the Messrs. Griffin, have published works to show, that neuralgia, angina pectoris, and palpitation of the heart, with many accompanying symptoms, are dependent upon irritation of the same locality. If to the foregoing we add hydrophobia, which is considered by some essentially a spinal disease, we complete the catalogue of suffering from this prolific source. The following case has come under our notice, and we think it not undeserving of publication.

M. F., aged about 25 years, on February 25th, 1854, in attempting to release a child from the grasp of a wounded hawk, which had been brought into the house, was struck on the outside of the right foot, and one of the talons of the bird penetrated between the metatarsal bones of the ring and little toes, making a wound of considerable depth. The pain at the time was not very great, but in three or four days it became severe, and extended up the leg from the place of injury. A physician was sent for, who made an incision into the place of the wound, and applied spirits of turpentine. Chamomile poultices were employed, and the wound healed in two or three weeks, under a dressing of simple ointment. The pain of the limb, however, was not in the least relieved, but continued to extend further up the leg. The outside of the sole of the foot also became painful, and likewise

the little toe and the ring toe. Five weeks after the reception of the injury she came to town and placed herself under our care. The pain of the limb was now so severe that she was unable to walk. The application of three blisters to the upper surface of the foot, in as rapid succession as the healing of the sores admitted, mitigated the suffering in so great a degree that she returned home, with the expectation of complete recovery. In about two weeks, pain made its appearance under the arm, along the side, extending round to the shoulder, and sometime afterwards presented itself about the middle of the humerus, having been preceded during several days by a sensation of heaviness about the neck and between the shoulders. The pain gradually extended down the arm to the hand and fingers; being confined, however, to the little and ring fingers. The suffering was more severe in the latter, as had been the case in the foot; the occasional paroxysms of pain having been much more severe in the ring toe, and likewise of longer duration. The wrist, hand and arm swelled considerably shortly after they became painful. There was distressing numbness and tingling of the arm, and so great weakness that she could not use it. This apparent weakness was no doubt caused by the increase of the pain on motion. The pain was especially aggravated by touching anything with the fingers, or laying the arm on the table. Two or three weeks after the pain occurred in the arms, about a week before she again came under our care, she was attacked with stiffness of the lower jaw, accompanied by great aggravation of the pain of neck, extending from the spine towards the front of the neck and along the jaw. The stiffness of the jaw appeared to exist on both sides, but the pain was altogether on the right side. She was probably deceived in supposing that the muscles of the left side of the jaw were affected. The rigidity of those of the right side would bind the jaw so as to make it appear as if those of the opposite side were also rigid. The pain and stiffness of neck were so great that she could not turn her head in the smallest degree; neither could she open her mouth so as to introduce a spoon. She had two attacks of this description in one week; the first, the most severe, coming on with darting, shooting pains, from the spine round to the front of the neck and along the jaw, with intervals of ease, and each attack continuing about an hour. She was relieved both times by bathing the legs up to the knees in lye, as hot as could be borne. Simultaneous with the appearance of the pain of side, arm and neck, great tenderness of the spine, chiefly on the right side, opposite the upper dorsal and lower cervical vertebræ, presented itself; which was augmented as the pain of the arm became more severe, until the slightest pressure caused

excruciating agony. During the week which preceded her return to town to place herself again under our care, she had scarcely slept at all, from the severity of her sufferings. On examining the spine the tenderness was found to be exceedingly great, and the slightest pressure produced contractions of the little and ring fingers. There was not at any time much general fever; but both leg and arm, especially the latter, were either burning with heat or affected with a very distressing sensation of coldness. These different feelings alternated frequently through the twenty-four hours, continuing an hour, more or less; but as the general rule, the heat continued longer than the coldness. When the cold stage came on there was something of a chill over the whole body, accompanied by sickness of the stomach. The hand and arm never felt cold when touched with the other hand, but occasionally felt hot; although sometimes when they burnt the most there did not appear to be any increase of temperature when felt by the other hand.

Cupping two or three times freely, and tartar emetic ointment along the tender part of the spine, very speedily relieved her almost entirely. Since that period, now about two years, she has enjoyed good health. Cups have been applied to the spine once or twice for some slight symptoms of reappearance, and the abstraction of blood in every instance has afforded remarkable relief. At present, whenever her mind is distressed by any cause, she experiences some pain of back about the lumbar region, but she cannot perceive that it is accompanied by tenderness of the spine on pressure; and it is but temporary, disappearing with the cause. There is still, however, a slight sensation of numbness and heaviness about the shoulders and neck, and latterly extending over to the left shoulder, accompanied occasionally by the feeling of something crawling under the skin. The right leg is also much weaker than the left, and fails in walking to any distance. The seat of the original wound gives her no trouble, except when she happens to place her foot on some elevated body which presses upon the sole of the foot opposite to it, slight pain and tingling are then produced, followed by an occasional sting shooting from the part, but of insignificant amount.

The foregoing is obviously a case of wound of one of the twigs, or of the trunk, of the external plantar nerve, which is distributed upon the little toe and the fibular side of the ring toe. The posterior tibial nerve, from which the external and internal plantar nerves originate, is the continuation of the great sciatic nerve, which is formed by branches from the three superior sacral and two inferior lumbar nerves. This nerve supplies the greater part of the lower extremity. Now,

the first inquiry which suggests itself is, did the pain of the limb proceed from an extension of the inflammation—from the wounded part of the nerve, to all the filaments supplying parts where pain was experienced; or was there merely increased sensibility, caused by the local irritation; an augmented power of transmitting impressions. We believe it was the latter; and our belief is founded on the fact, that as the local inflammation subsided under the repetition of the blisters, the pain of the limb disappeared; which we think would not have been the case if there had been so extended an inflammation. If we are asked to explain the manner in which the nerves take on this augmented power of transmitting impressions, we reply, that we will give a satisfactory account of this whenever we are shown how common it is they transmit ordinary impressions—whenever we have it made clear, what it is, in which a sensibility consists.

It should next be remarked, that the irritation, when extended to the spinal marrow, appears to have concentrated its force about that part from which the brachial plexus of nerves arises, viz. opposite the upper dorsal and the lower cervical vertebræ; and it is manifest that the affection of the hand, arm, and shoulder, and neck, was consequent upon the morbid condition of this portion of the spinal marrow, and probably of the roots of these nerves. We think we are justified in this inference from the course the irritation, in propagating itself, must necessarily have taken from the tenderness of the spine; the gradual extension of the pain along the arm to the fingers; the contraction of the little and ring fingers on pressing the spine; and the immediate relief afforded by the treatment. It cannot but have been remarked, that as in the foot it was the little toe and the ring toe, which were affected, so in the hand, it was the little and ring fingers which were the seat of the pain; the latter being supplied by the ulnar nerve, in the same manner as the former are by the external plantar nerve. This would seem to indicate a direct connexion or continuity of filaments, from the foot to the hand.

With the exception of tetanus and hydrophobia, most of the diseases which appear to be connected with, or dependent upon, irritation of the spinal marrow, although sufficiently distressing, are not often fatal; and therefore afford us but few opportunities for examination. We think, however, that we are warranted in the inference, from the symptoms and treatment, as well as from the appearances in those cases where death has been caused by tetanus, that in many instances, either the medulla itself, its membranous envelopes, or the roots of the spinal nerves, are in a state of congestion, to a greater or less amount. Admitting it to be true, that the nervous matter can

have its functional action increased, and augmented sensibility, amounting to pain, be the consequence prior to, and independent of, any disturbance of the vascular system of the nerves and spinal marrow, it is nevertheless equally true, that so intimate is the connexion between the nervous and vascular systems, that the latter will soon partake of the irritation, and congestion quickly appear, which, reacting upon the nervous matter, will aggravate all the symptoms; and thus action and reaction will alternate, until change of organization is effected, and morbid products present themselves, indicating total destruction of healthful function. That very great changes do take place in the spinal canal, either as the cause, or the effect of disease, has been established beyond a doubt. Dr. Saunders has observed them after fever and gout; and the French pathologists have seen them after fatal cases of tetanus. And although we believe Dr. S. mistook the effect for the cause, we unhesitatingly admit his facts. We have not a doubt that he witnessed the morbid appearances of which he speaks; but we are quite as confident that they were the result of a cause, or causes, acting upon the system generally, and by no means confined to the spinal marrow. The destruction of the equilibrium of the circulation, in fever, is as likely to affect the spinal marrow as any other organ or tissue; and perhaps more so, it being the great centre for the reception of impressions from nearly the entire body. But it is manifest, that it is the sentient extremities of the nerves, which receive the primary impressions, and that the spinal marrow is secondarily affected along with the brain; from which organs the impression is transmitted to the sanguiferous system, disturbing its healthful operations; and it again reacts upon the nervous system. We thus have the same circle of action and reaction, as regards the entire system, as we have in relation to a single point. The French pathologists, we think, have given us information entirely satisfactory respecting the amazing changes which take place during the progress of a fatal case of traumatic tetanus. The irritation is propagated from the wound to the spinal marrow, and morbid action is excited there, which speedily produces morbid secretions and change of structure. The tetanic symptoms are those which we know are produced by irritation of the spinal nerves; and although the spinal marrow is secondarily affected, the primary irritation being seated in the wound, so extensive and predominant is its influence, through the nerves which it sends off, and distributes far and wide, it should receive our undivided attention. The original wound is comparatively insignificant. When the tetanic symptoms appear, we

may therefore safely say, we have a disease of the spinal marrow to treat.

In the case we have narrated, the irritation had nearly reached the point at which tetanus would have presented itself. She had two attacks, by no means light, of trismus; and a little more would have brought on the general tonic spasm. We have also in the same case a striking example of the influence of the nerves upon the blood-vessels. An irritation propagated down the arm from the roots of the brachial plexus of nerves, caused considerable tumefaction of the limb. The capillary arteries were probably excited so as to drive the red blood into vessels not usually carrying it.

Some writers still entertain doubts as to the reality of this whole subject of spinal pathology; and are disposed to regard it as a fiction of the imagination. The seat of the pain along the spine is said to be unknown. It may be neuralgia, congestion, inflammation, or something different from all. The slightest touch renders it excruciating. This shows that its situation is external to the vertebral canal. In the case of a lady, merely passing the fingers lightly over the fine hairs covering the nape of the neck, threw her into an agony. The persons afflicted are generally females, labouring under the mixed affection called nervous; and frequently on pressing the spine, the patient will shrink, or even cry out; but when the hand is transferred to another and remote part of the surface, the same indication of uneasiness or suffering will be repeated. Evidence from morbid anatomy, to confirm or refute that deduced from symptoms, is but rarely obtained; no structural change being discoverable in the part supposed to be the seat of disease. The results of the treatment, too, are equivocal. The difficulty of distinguishing between physical amelioration and mental impression, is so great, that the evidence derived from this source is of doubtful validity. Chalybeates and other tonics, with change of air and scene, are often more beneficial than local depletion and counter-irritation. In one of the cases reported by Mr. Torbet, in the Edinburgh Medical and Surgical Journal, leeches, blisters and issues were employed, as some will think profusely; but no material improvement took place till the patient was conveyed into another county. In another case, the complaint was aggravated by an issue in the back, and the patient recovered on its healing.

In reply to these objections, we venture to assert, in the first place, that so far from the texture or part in which the disease is seated, being unknown, there is scarcely an example of disorder of parts concealed from the eye, in which anatomy, physiology, pathology, and symptoms more forcibly combine, to point out the precise locality.

The function of the spinal marrow is, to be the medium of conferring motion and sensation. The sentient extremities of the nerves it sends off, are the principal seat of sensibility. The skin is more liberally supplied with nerves of sensation than the other tissues. Hence we find that increased sensibility of the skin, even amounting to acute pain, is the common symptom of disease of the spinal marrow, when it does not pass beyond a certain point. It varies according to the extent and intensity of the affection. A case is related by M. Serres in the *Archives de Medecine*, of a patient who had complete muscular paralysis, with increased sensibility of the whole surface of the body. He cried out and suffered great pain when the skin was lightly touched, and when the paralysed limbs were moved. On examining the body after death, the anterior portion of the spinal chord, between the sixth cervical and third dorsal vertebræ, was found softened and disorganized to the extent of three inches and a half; the posterior portion at the same part was slightly altered to the extent of one inch. The increased sensibility came on after the paralysis had existed some time. Here we see the augmented sensibility extending over the entire surface of the body; and we have the morbid condition of the spinal chord verified by dissection. The extraordinary case of the lady who was thrown into an agony, by passing the fingers lightly over the fine hairs covering the nape of the neck, is thus satisfactorily explained, no doubt the other tissues alongside of the spine are affected in proportion to the number of nerves of sensation distributed upon them. Besides, in the absence of the other ordinary symptoms of inflammation, in what other manner shall we account for the pain? The appearance of the skin is natural. There is no discoloration; no tumefaction. This would not be the case, if the soft parts external to the spinal canal, were the primary seat of disease. In the case we have narrated, not only was there pain on pressure, but the muscles of the arm supplied by the nerve, chiefly or solely affected, were thrown into spasmodic contraction.

We thus perceive that the symptoms are precisely such as we would anticipate, from our previous knowledge of structure and function. And although it is true, that in some of the fatal cases, no structural change can be observed, we need not be surprised, inasmuch as this occurs continually in other forms of disease; and only proves that functional disease had not yet reached the point of organic change. In the great centres of the nervous system too, disturbed function will produce more violent symptoms than in most other parts of the organism. But we have in the most severe and fatal cases of disease of the spinal chord, abundant evidence of morbid action; and so per-

fectly analogous are these cases, in many of their features, to the milder examples, that we are fully justified in the inference, that different degrees of this action, having either an entire similarity, or at least a close resemblance, have produced the diversified results. When we compare some of the symptoms of the severer forms, such as spasmodic contraction of muscles, and augmented sensibility of skin, in which after death disorganization of parts of the spinal chord, or its envelopes, is observed, with the same symptoms as they are presented to our notice in the milder instances, the resemblance is so strong, that we cannot be mistaken in referring them to identity of morbid action.

If the reader will turn back to the case of M. F. he will discover that she still experiences some pain of back, about the lumbar region, whenever her mind is disturbed by any cause whatever; that it is however but temporary; and disappears with the removal of the cause. This is probably an example of the slightest form of spinal irritation: no one questions the influence of the mind upon the body; and if hysteria originated in the great toe, its symptoms would be affected by the varying state of the restless mind. We know too that the different parts of the nervous system, are allied by a closer sympathy, with each other, than they are with the sanguiferous or any other system. We would therefore expect, that the mind acting upon the brain, and through it upon the spinal chord, would powerfully affect it, either for good or evil; and the greater its susceptibility of impressions, in consequence of morbid action, the more violently will it be excited by all kinds of mental agitation. Hysterical convulsions are frequently induced by mental excitement; and we have the best evidence, that the brain is not materially impaired in its operations, but that the spinal chord is the principal sufferer, in the fact, that the patient is not unfrequently conscious of what has been going on around her; although the spasms of the muscles prevented her from speaking. Sometimes in hysterical convulsions, and always in epileptic, the patient is altogether unconscious of his condition; which shows that in these cases the brain is also in a very disturbed condition. It is however manifestly impossible to have spasmodic motion, any more than voluntary motion of the greater part of the muscles of the body, except through the intervention of the spinal chord. Such being the connexion between the brain and spinal chord, it is therefore obviously absurd, to object to the spinal pathology, that the mind must be engaged, and the intrusion of distressing thoughts prevented, in order to effect a cure. In many cases this alone would be sufficient; as in that class where the mental affection is the primary link in the chain of causation; and

where the spinal chord has not suffered to that degree, that the unaided efforts of nature, on the removal of the disturbing cause, are insufficient to restore its healthful action. But it by no means follows, that this attention to the *juvantia* and *lædentia*, which are indispensable auxiliaries in the treatment of all diseases, is all that is required in cases of greater intensity.

Neither is the objection, that remedies, such as "chalybeates and other tonics," apparently but ill suited to remove a disease arising from congestion or inflammation, have obtained great celebrity, at all more valid. In the slighter cases the irritation may not have reached the point of congestion; or if it has, the congestion is in its primary stages; and here medicines which improve the tone of the capillary system, are the best we can employ. Such medicines by invigorating all the living solids, and removing that debility which is not an uncommon concomitant of these cases, and doubtless in numerous instances, is one of the most active of the causes producing that extreme irritability, which so strongly predisposes to these convulsive paroxysms, are the very remedies which a comprehensive view would regard as being especially indicated. There is no question but that in relaxed habits, the slighter forms of congestion can be more speedily and certainly removed, by a mild course of tonics, with proper attention to regimen, than by any other method. And these are precisely the cases too, in which, occasionally, the conjunction of moderate depletion, by cups or leeches, is particularly serviceable. So that in many cases, tonics alone will cure, by infusing general vigour, and thus removing extreme sensibility to impressions, mental or physical, and also slight local congestion; while in a second class of cases, the application of cups or leeches to the part of the spine which exhibits tenderness, followed by tonics and attention to air, exercise, &c. will be sufficient; and again, in the third or most violent forms, a strict antiphlogistic plan is required, with perhaps repeated cupping and counter-irritation. It is only in these last cases that tonics are contraindicated. Antispasmodics, in as far as they allay irritability, and are tonic in their properties, are beneficial in the two first classes. We thus perceive, that the same general principles should govern us, in the employment of tonics, as in the use of local depletion; and that the two sets of remedies are by no means incompatible.

In Mr. Torbet's case, the "leeches, blisters and issues" were either inappropriate at the commencement, or they were used to excess; or continued longer than was necessary. We think it doubtful whether any permanent irritation, such as that of an issue, is

adapted to these cases. The danger is, that after the affection of the spinal chord has been removed, the irritation of the issue may react upon an organ so extremely impressible as the medulla spinalis; and thus the remedy employed becomes a source of renewed disease. We greatly prefer the tartar emetic ointment, which can be made to produce any amount of inflammation we choose. It should be discontinued as soon as the complaint appears to be effectually subdued.

In no disease has the treatment been more diversified than in tetanus; and a few cases appear to have been cured by almost every method. It is plain that no uniform plan can be fixed upon, until we are agreed as to the pathology. If it is true, that it originated either in functional derangement, or inflammation of the spinal chord, or its envelopes, our attention should be chiefly directed to that organ; and our treatment should be conducted on what are considered established principles. Dr. Symonds, in the article Tetanus in the London Cyclopædia of Practical Medicine, makes the following remarks: "The periodicals of the last twenty years furnish several cases, in which morbid appearances were said to be found in the spinal chord or its envelopes. But since anatomists have learned to place less reliance upon mere redness and turgescence, as indications of inflammation during life, the profession have become less and less satisfied, as to the constant presence of morbid changes in the spines of tetanus patients. Of the cases communicated to Hennen, many presented the chord and its membranes in a perfectly natural condition, and he had reason to suspect that the apparent lesions of these parts were often due to the rude use of the chisel and saw. The unskilful mode in which we have often known the operation of exposing the contents of the vertebral column performed, leads us to consider the author's conjecture a very probable one. Sir B. Brodie could never satisfy himself that these parts were diseased. Dr. Elliotson considers the appearances described to be rather incidental than essential; and Mr. Morgan, after mentioning that in some cases cerebral congestion and increased vascularity or morbid deposits in the spinal membranes have been discovered, declares that in other cases he has looked in vain for the same appearances. The following passages in a lecture delivered by Professor Mayo, at King's College, has just caught our attention. 'In the museum of St. Thomas's Hospital, I am informed by Mr. Green, there are two specimens of the spinal chord, the membranes of which are studded with little cartilaginous and earthy flakes, taken from patients who died of tetanus. These small deposits did not, it is to be presumed, produce the tetanus, but they probably had made the spinal chord preternaturally irritable.'"

In the first place, as to the want of skill spoken of in the above passage. It ought not to be brought forward as an objection; it might be so in some instances, but Mr. Morgan, we may safely suppose, displayed equal skill in the examination of all his cases; and in some he found morbid appearances, in others not. It is certainly too, a great stretch of incredulity to insinuate that the eminent pathologists who have investigated this subject, have mistaken the effects of unskilful dissection for morbid changes. If this is not the design of the statement, it means nothing, the fact that some men have made this mistake, is no proof that others have.

In the second place, it is admitted, that turgescence of the larger veins, is not alone indicative of inflammation; although it may possibly have been so regarded by some. But when the naturally transparent arachnoid membrane is red with turgid vessels, and associated with this, there are thickening and opacity of the same tissue with serous, sero-purulent, and sero-gelatinous exudation; and when along with turgescence of the vessels of the pia mater, there is softening of the medullary substance of the chord, it is absolutely impossible there can be any mistake. These appearances have all been frequently observed.

In the third place, as to the objection that in many cases no morbid structure can be seen, it has no validity, unless it has included in it the statement that death cannot be produced by functional disturbance of the spinal chord; and also, that no change of structure whatever, can occur, which cannot be discovered by the knife of the anatomist. Cases of insanity present themselves continually, in which no sign of disease of the brain can be detected; and yet nobody hesitates to admit that this organ must have been diseased. If there was organic disease the anatomist could not find it; if there was not, functional disease must have been sufficient to produce all the symptoms. The wonder is, that in a disease, running its course so rapidly as tetanus frequently does, that morbid changes are so often discovered. If the spinal chord is the seat of traumatic tetanus, its first morbid state is that of simple irritation; which may or may not go on to organic change. Inflammation does not necessarily follow irritation. Mr. Mayo thinks that in the specimens of spinal chord contained in the museum of St. Thomas's Hospital, there must have been preternatural irritability, which of course would predispose to morbid action. This functional disturbance may in many cases be of itself sufficient to cause death; and leave no evidence of its existence. There can be no doubt that the progress to a fatal termination, will be more or less rapid, according to the extent of the chord seriously affected; and the particular

vital organs upon which it concentrates its force. If the whole chord up to the tuber annulare, is violently attacked, the case will be much more alarming than if only a small portion is assailed. If the heart and the diaphragm are seized upon, some suppose it is impossible the patient should recover. Now it is not at all improbable that the viscera of the thorax and abdomen, in some individuals, have a greater sympathy with the spinal chord than in others. In fever some persons have much more pain of back than others. Where this sympathy is great, a less amount of spinal irritation will produce an equal effect; so that when we consider the various conditions of different individuals, and of the same individual at different times, we should not be surprised at such diversified results. An unpleasant odour, or the sight of a disagreeable object, will throw some persons into convulsions; while they have not the slightest effect upon others. It is thus obviously impossible to lay down any laws, either as regards the healthful or morbid condition of the human system, which shall be universally applicable.

If we do not regard tetanus as a spinal disease, to what organ shall we refer it? It is perfectly plain that the spinal chord is affected, either primarily from the wound, or secondarily from some other part. Mr. Joseph Swan, in a work published in 1825, states that he has found the ganglia of the great sympathetic nerve in a state of congestion or inflammation; and expresses the opinion, that these ganglia are the important parts of the nervous system to which the first irritation tends, and from which it proceeds to the rest of the nervous system. While Mr. Abernethy thinks the *digestive organs* are first in fault, and that the spine comes after. But surely it is a circuitous and unsatisfactory way of explaining the phenomena, to pass from the wound to the ganglia of the sympathetic, or to the abdominal viscera, and then to the spinal marrow, when we have a more direct rout, by the nerves going straight to this organ. We therefore consider it more rational to view the spinal chord as the second link in the chain of causation, and to refer all the affections of the thoracic and abdominal viscera, and the ganglia of the sympathetic nerve, to their connexion with it. This view of the subject too, appears the more rational, when we consider that the sympathetic system of nerves is, as far as we can discover by experiment, destitute of impressibility. The division by the knife of the branches of this nerve is unproductive of pain. We *infer* that the sympathetic nerve communicates a peculiar and low degree of sensibility to the parts it supplies, chiefly from the fact that it is distributed upon these parts, and we cannot believe it to be entirely useless. And this low sensibility is a wonderful and wise provision of nature. The organs upon which this nerve is ramified, are so important to life, that if they were as easily disturbed as

those which are supplied by the spinal nerves, the term of our existence would be exceedingly brief. If, for example, spasm of the heart was as common as of the voluntary muscles, such as cramp of the calf of the leg, life would be held by a very precarious tenure. If then it is comparatively so difficult to excite action in the sympathetic system of nerves, and so easy in the spinal system, is it not more rational to look first to the latter? Evidence to corroborate this view, may also be derived from the state of the pulse, which, during the interval of the paroxysms, is nearly natural. We are therefore disposed to regard tetanus as primarily and essentially a disease of the spinal chord and its membranes, in the traumatic form produced by an irritation propagated from the original seat of wound.

Previous to discussing the treatment, we will make a few remarks on the value of pressure alongside of the spinous processes, as an evidence of disease within the spinal canal. The great tenderness of the skin we have seen, must and does proceed from disease of the contents of this canal. Touching the skin lightly must then affect the chord, by the sympathy of continuity and identity of texture; the nerves proceeding directly from their origin to the surface. This symptom is thus derived from the anatomical and physiological connexion of the parts. But can we by pressing alongside of the spinous processes, apply any of the force to the chord itself, or to the nerves at their roots? We have seen in the case of M. F. that slight pressure produced contractions of the little and ring fingers; and in many cases pain is produced in the parts opposite the point where the pressure is made. Thus pressure on the first or second cervical vertebra, will cause pain of the brow; on the second or third, about the larynx; on the lower cervical, about the inferior part of the trachea, and at the top of the shoulder and in front of the chest; and so on to the lower termination of the spinal column. Now is the force of the pressure received upon the roots of the nerves after they have passed out of the canal through the inter-vertebral foramina, or upon the chord itself? The inter-vertebral foramina are of considerable size, and are filled up by a loose cellular tissue surrounding the nerves and blood-vessels; so that perhaps it is not impossible, that the chord itself may receive some portion of the pressure. If, however, it is so well protected that no part of the force can be applied directly to it, through the intervening parts, we must suppose that pressure upon the roots of the nerves after they have passed out from the canal, is sufficient to produce the pain and contractions to which we have referred; and this answers every purpose in establishing our diagnosis, inasmuch as we have no proof that the nerves immediately exterior to the canal are ever affected, independent of the chord.

If then we suppose tetanus to be an irritation of the spinal chord, in many cases passing into inflammation, the treatment should manifestly be antiphlogistic; and all pure stimulants are inadmissible; and if the inquiry is made, how it has happened, on this supposition, that some have been cured by stimulants; we reply, that the most injudicious treatment of any disease will not kill all. Some will recover in spite of the union of apparently every possible adverse circumstance.

Blood-letting as the most powerful antiphlogistic remedy we possess, comes first to be considered; and here we are decidedly of the opinion, that general bleeding has been carried too far; and too often to the exclusion of local, by cupping and leeches. The ferociousness of the disease has, in the great majority of cases, caused all the remedial measures to be carried to extremes; so that if the disease did not kill, the remedies surely would. We were informed by a physician to the British forces, who served through the Peninsular campaigns, that a quart of laudanum was sometimes given in the course of twelve or fourteen hours; and a drachm of solid opium every two hours; and the patients all died. Mr. Abernethy once found thirty drachms of solid opium undissolved in the stomach; and 110 bottles of port wine have been administered to one man, but he managed to recover; so that port wine cannot be so bad a thing as one might suppose; at least it must have agreed with this individual. In numerous instances, however, wine as well as brandy have totally failed. General bleeding is not indicated, for the most part, except as an antispasmodic; and surely it is too debilitating a remedy to be employed extensively for this purpose. The pulse does not denote that high action of the arterial system which demands copious bleeding; on the contrary, during the paroxysms, it is hurried and irregular; and in the intervals, nearly natural. Occasionally it is somewhat full and hard. "Dr. O. Beirne, who was stationed with the artillery in the Peninsular war, where he saw about two hundred cases, and who had the sole charge of the wounded officers and men of the artillery at Brussels, after the battle of Waterloo, states that he never saw a case of tetanus accompanied with fever." The truth is, at the commencement it is more a disease of irritation than inflammation; but no doubt it soon passes into this latter stage. Still the heart is not even then excited to high action, as in phrenitis. The general irritation of the nervous system, would seem to have more of a depressing influence; inasmuch as the pulse speedily becomes very frequent and small, and rather feeble. In the cases of individuals of robust frame and great vigour of constitution, with a full, hard, strong pulse, moderate general bleeding may unquestionably be beneficial. We think, however, that this is one of those diseases in which the local

abstraction of blood, by leeches or cups, is more clearly indicated than perhaps in any other, and we have been surprised to see it so little insisted on. Large quantities of blood we know may be abstracted in this way; and the vascular communication between the skin and the spinal chord is almost as direct as the nervous. We would, therefore, greatly prefer free cupping along the course of the spine, or the application of leeches, one or both, to the use of the lancet. If any one part is more tender on pressure than others, from this part blood should be first taken; and every repetition of it should be partly from the same vicinity, as long as the tenderness continues.

Next to the local abstraction of blood, we think counter-irritation to be deserving of confidence; and for this purpose it is obvious we must employ some agent whose action will be immediate. The tartar emetic ointment and blisters are too slow in their action. It is very desirable that the morbid action should receive a check as early as possible; and the delay of even a few hours is not unattended by danger. Counter-irritation cannot therefore be established too early after depletion. Fatal disorganization speedily occurs in the worst cases, when the disease is allowed to proceed unmolested; after which our best means can only mitigate the severity of the patient's sufferings. The actual cautery, or the moxa, would probably be most efficient; but in private practice it would be difficult to prevail upon patients to submit to their application. A very good substitute for them is the caustic potass, which should be rubbed upon those parts where the cups or leeches had been applied, so as to produce considerable inflammation of the skin without destroying it. The potass is possessed of this superiority over the actual cautery and the moxa, that more extensive inflammation can be produced, a larger surface can be acted on, and the skin not necessarily killed; and as this tissue has greater sympathy with the spinal chord, from the large number of nervous filaments distributed upon it, than the subjacent tissues, especially the subcutaneous, which has but few nerves in a given space, the nerves passing through it in comparatively large branches; and from the sentient extremities of the nerves being ramified upon the skin, it is very important that inflammation should be kept up in it with as little injury to its sensibility as possible; so that where the actual cautery or the moxa are employed, they should not be applied to an extensive surface. If the symptoms do not manifest a disposition to yield, cups or leeches should be applied to other parts not yet touched, followed immediately by the caustic potass. In this way the whole back may be gone over, if the unyielding nature of the symptoms require it.

For the purpose of controlling the spasms and preventing that

derangement of the circulation, which must inevitably follow such violent muscular action, by hurrying the blood from the extremities and the surface, towards the heart and lungs, and other central and vital organs, some of the preparations of opium should be administered; and the acetate or sulphate of morphine are to be preferred, as more definite and certain in their operation. They should be given in solution in distilled water, and in large doses, more or less frequently repeated, according to the violence of the spasms. Opiates are to be employed, not with the expectation that they will have much effect in advancing the cure, but simply to allay irritability, and mitigate the spasms. No more should be given than is necessary for this purpose.

The frequent repetition of powerful doses of drastic purgatives, such as scammony and gamboge, combined with calomel, and succeeded by salts and senna, and croton oil, have been thought by some writers to be almost sufficient by themselves to effect a cure. However this may be, there can be no question but that they are very useful assistants. The bowels should be freely purged, and to accomplish this the most powerful cathartics are required. It has been thought that the counter-irritation along the course of the alimentary tube is beneficial. We can scarcely imagine that any amount of irritation which can with safety be applied in this way, would be felt in the slightest degree by the spinal chord, when labouring under that intense irritation which produces tetanus. But the excitation of the excreting organs of the abdomen, and the consequent discharge of offensive matter, cannot but be serviceable. To show the quantity of cathartic medicine which may be given with impunity in some cases, we transcribe the following from the London Cyclopædia.

"In a case related by Dr. Briggs, the following quantities were administered. During the first twenty-five days, calomel gr. 320, scammony gr. 340, gamboge gr. 126, powder of jalap ʒv. and ʒvii. ss. infusion of senna, with tincture ℔. x. ℥ colocynth pill ʒiss. and gr. 45; of which the greatest part was taken within the first week, namely, calomel 280, scammony 260, gamboge 110, jalap ʒiij. gr. x. infusion ℔. v. 5-6. The quantity given in little more than forty-eight hours, is perhaps unprecedented in this country, amounting to, scammony gr. 210, gamboge 89, jalap ʒi. and ℈iv. infusion ℔. ij. ½, calomel gr. 80, and all this without causing either sickness or griping, but on the contrary with the most decided benefit."

The prussic acid, from its supposed power of allaying irritation of the nervous system, is perhaps deserving of farther trial. It may be given in conjunction with the remedies already mentioned; and the extent to which it is carried must be determined by its apparent effects; of which, however, it is not easy to judge, when it is associated with other agents. We would not recommend the administration of enormous quantities, as its depressing properties might exhaust the vital energies to a fatal extent.

On the foregoing remedies we would rely in cases either of idiopathic or traumatic tetanus. We are inclined to think that the great want of success hitherto, may be ascribed to two causes; 1st, not acting with energy in the incipient stage, and 2nd, trusting too much to specifics. We have seen a little laudanum given, increasing the quantity as the spasms became more violent, with some gentle cathartics, during two or three days; thus wasting those precious hours, which should have been employed in nipping this ferocious malady in the bud. A late writer of respectability says, "that it is incumbent on us to look about for new remedies, since the old ones have all failed;" and he suggests a trial of strychnia; not even on the well defined principle of homœopathism, which however irrational is perfectly clear; but because "such agents prove by their occasional production of symptoms like those of the disease to be treated, that they act on the part which is the seat of that disease, and consequently that there is a probability that in their operation on that part, (whether it be in a sufficient degree to produce a similar disease or not,) they may effect a beneficial change."—(Dr. Symonds, London Cyclopædia, art. Tetanus.) It would seem from this, to be of no importance to inquire whether the known properties of the remedy are adapted to the character of the disease. Nearly all the remedies which have been employed, have been prescribed on this principle. It was expected they would have some specification upon the disease wherever it might be located; and as long as we continue to act on this empirical plan, we must certainly fail in a majority of cases. Indeed the probability is, nay, the certainty, that we shall more frequently do mischief than confer benefit.

In traumatic cases we object to the application of irritants to the wound. They can only increase the inflammation of the injured nerves, which, instead of lessening the irritation of the spinal chord, must necessarily add to it. If the wound has healed, blisters to the skin, directly over it, as counter-irritants, will be serviceable. If it is still open, fomentations and emollient poultices are plainly indicated.

In the numerous other remedies mentioned in the books, we confess we have no confidence.

If hydrophobia is an irritation and inflammation of the upper part of the spinal chord, affecting chiefly the medulla oblongata, at the origin of the eighth pair of nerves, as some are inclined to believe, the same plan of treatment, confined as much as possible to the upper part of the spine, we should think would give the greatest promise of success.

REVIEWS.

ART. X. *Des Aliénés. Considerations, 1.° sur l'état des maisons qui leur sont destinées, tant en France qu'en Angleterre, sur la nécessité d'en créer de nouvelles en France et sur le mode de construction à préférer pour ces maisons; 2.° sur le régime hygiénique et moral auquel ces malades doivent être soumis; 3.° sur quelques questions de médecine légale ou de législation relatives à leur état civil.* Par G. FERRUS, *Médecin de l'hospice de Bicêtre, médecin consultant du Roi, &c. &c.* 8vo. pp. 315: Paris, 1834. (Imprimé par ordre du Conseil-général des hôpitaux et hospices du Paris.)

On the Insane. Considerations, 1st. on the condition of the Insane Hospitals in France and England, on the necessity of erecting new ones in France, and on the best plan for such institutions; 2nd. on the hygienic and moral treatment of the insane, and 3d. on some medico-legal questions relative to their civil condition. By G. FERRUS, Physician to the Hospital Bicêtre, &c. Paris, 1834, 8vo. p. 319, with a plate and table.

However widely men may differ in opinion respecting the efficacy of therapeutic agents, or the importance of pathological anatomy, no one can doubt the positive utility of that branch of medicine which is denominated Hygiene. At no period in the history of our country could a book of the above unpretending title, which contains so much that may be useful both to mental and physical health, have been more interesting. The population returns show a vast increase of lunatics and idiots, and there is a movement in many of the older states in favour of establishing public hospitals for the reception and treatment of the insane.

The author of the work before us, who is favourably known on the other side of the Atlantic, is a gentleman of eminence in his profession, and has been for many years physician in chief to the insane department of the hospital of Bicêtre, to which establishment all the male pauper lunatics of Paris are sent. His constant observation there of the treatment, location, classification, clothing, feeding and employment of 700 lunatics gives to his opinions the highest value. And whoever has followed him in his official visits can bear testimony to the zeal, philanthropy and ability with which he performs his important duties. The numerous improvements which this institution has undergone of late years, have been materially advanced if not suggested by M. Ferrus.

His work is divided into two sections. The *first* is devoted to asylums for the insane in England; the second section, which is subdivided into five chapters, comprises in the 1st chapter, some statistical and other observations relative to the various lunatic asylums of France. The 2nd treats of improvements made and to be made in the hospital of Bicêtre. In the 3d are pointed out the general rules to be followed in the formation of plans for insane hospitals. In the 4th the hygienic and moral treatment which various diseases in general require, are spoken of—and the 5th chapter is devoted to the consideration of some new and important questions in legal medicine.

We will not attempt to place before the reader all the objects of the author's *coup d'œil* of British charitable institutions. He found in them many things novel and very unlike those of his own country. But what may seem strange to a Frenchman would be familiar to an American, whose institutions are derived chiefly from England, and whose charitable establishments resemble those of the mother country in many particulars.

In France the charitable, like the literary and scientific institutions, usually emanate directly from the government; and the few that are founded by private munificence are soon placed under the *surveillance* of public authority. In Great Britain and America, hospitals and benevolent establishments are founded for the most part by philanthropic individuals or associations, and are entirely uncontrolled by government. They are under the direction of men who derive no other compensation for their services than that which arises from a consciousness of doing good.

In Paris, the charitable establishments are under the direction of a general council and of an administrative commission. The members of the first are named by the king, of the second by the minister of the interior; and all are subject to the jurisdiction of the latter.

In the different parts of the country and in the communes, the council and commission are appointed indirectly through the prefects by the king, or directly by the prefects themselves. Each member of the administrative commission of Paris receives a salary of 1500 francs per annum. Those of the departments perform their duties, which are comparatively limited, gratuitously. The revenues of the charitable establishments in France are derived from the following sources:—

1. Realized and fixed property (*biens fonds,*) either in lands, houses or public stock. 2. Legacies and donations. 3. Money paid by persons received into the hospitals and hospices. 4. Monts de Piété. 5. Theatres and other places of amusement. 6. Public verification of weights and measures. 7. Confiscations and fines. 8. Excise.

The revenues of similar establishments in England are derived from rich endowments, and from voluntary contributions; each institution having an independent and distinct government of directors

chosen from among the members or subscribers, and not responsible to any higher authority.

We will not stop to discuss at length the advantages or disadvantages of these respective systems. If the administration of *some* of the English establishments be conducted with more energy, that of *others*, owing to local causes, is less exact and efficient. The charities of France, being under one general system, are conducted with more equality and economy; and their benefits to the sick and infirm of the nation at large are more evident and satisfactory.

Notwithstanding the advantages that may result from this national method of management, the plan adopted in England and followed here, is more conformable to the spirit of our institutions and the genius of our people.

A striking difference between the French and English charitable institutions consists in the large number of persons employed in the former, compared with those in the service of the latter. In the French pauper asylums for the insane, one keeper or nurse is usually allowed to ten patients. M. Esquirol thinks this insufficient. At his own private establishment each patient has at least one attendant, and in some instances more. At the royal hospital of Charenton, the proportion is much greater than one to ten. In this establishment, where there are usually 500 patients, there are no less than 196 "employés." The following is a list of some of them. Of course all the subordinate officers, attendants and servants, forming the great mass of persons employed, are omitted.

Medical Department and those attached to it.—One physician in chief; one adjunct; one inspecting physician; two house physicians, (elèves or advanced students;)—one surgeon in chief; one house surgeon or advanced student;—one apothecary in chief; one apothecary's assistant (an advanced elève;)—one surveillant, (supervisor) himself a physician, his duty being to execute the orders of the physicians; one surveillante, (matron) with duties similar to the last; one infirmier en chef, (head-keeper or assistant supervisor;) one infirmiere en chef, (sub-matron.)

Officers not medical.—One director, superintendent of the whole establishment;—one secretary or chief clerk; many clerks;—one steward; one under steward; many clerks;—one "receiver," (receiver of rents and other funds;)—one book-keeper; several clerks;—one architect; one master mason; one chaplain.

All these officers, except the physician in chief, adjunct physician and surgeon in chief, reside on the premises and form a part of the regular household. The physician and surgeon in chief reside in Paris—the first visits the hospital three times a week—the last occasionally. The adjunct physician lives in the vicinity of the hospital, which he visits four times a week.

As the government committee visits the establishment but four times a year, the ordinary duties of inspection fall on the physicians.

Compared with the above list, the number of officers in the service

of English hospitals will be found small; and the number employed in American institutions much smaller.

Our author takes a general view of the hospital establishments of England, and makes various strictures on their "materiel," "personnel," and the management of their medical departments. He speaks of the superior advantages they might have enjoyed from their munificent endowments, over those of France, if their directors had taken proper means to procure suitable models for their edifices;—the French having been obliged for the most part to use old structures, originally intended for other purposes. He very liberally admits the cleanliness and good order of English hospitals, but expresses some surprise, that in establishments well supplied with water, so few baths were in use; and instances the hospital of the rich and populous city of Manchester, which has but one bathing tub for 170 beds. He acknowledges the superior degree of neatness which the frequent repetition of painting gives to the interior of British hospitals, but claims for those of France the advantages of better beds and bedding. There is one thing, it must be admitted, in which the French hospitals excel all others that we have seen, either in England or America, which is that the beds are not only supplied with numerous changes of sheets, pillow cases, &c. but large quantities of body-linen of every description are provided for the use of the patients. When the deficiencies of the poor in this respect are considered, we cannot too highly praise that philanthropy which has so generously supplied their wants.

M. Ferrus in extending his observations to the "personnel" and internal police of English hospitals, speaks of the difficulties which the sick are obliged to encounter in order to gain admission. He points out the want of a proper classification, as seen in the indiscriminate mingling of adults with children, and the treatment of too great a variety of diseases in the same wards; while he alludes with very just feelings to the advantages which the establishments of his own country possess in the sisters of charity. "How much happier are we in this respect than our neighbours! how much to be preferred are the services of the sisters of charity, whose devotion is derived from a principle far more elevated than all human calculation!"

The third chapter of the first section of the work is devoted to the medical services of English hospitals. His strictures on the functions of the apothecaries attached to English hospitals, are very just.

To this officer (the apothecary) "are granted the most varied attributes: always present in the hospital he makes up by his regular visits the too infrequent ones of the physicians; and in their absence orders medicines, modifies prescriptions already made, and thus becomes in fact the most important member of the medical staff. This prerogative granted to apothecaries seems equally singular and incomprehensible. Although the persons who fill these stations may in general be very respectable for talents, and before having such important functions confided to them, obliged to give some proofs of medical acquirement; the almost unlimited confidence which is granted to them, does not seem to be without danger."

We pass over the author's comparison of the pharmaceutic prepa-

rations of the English and French hospitals, and his remarks on the manner of conducting medical and surgical education at the former.

It is but a few years since the insane in one of the most enlightened and civilized countries of christendom, were treated with a barbarity worthy only of the dark ages. They were shut up not for the purposes of a rational treatment, but to rid society of trouble or danger, and in many instances to serve the selfish ends of relatives. The law of force acknowledged no milder means of restraint than chains, and the lash was a regular medical prescription. It is not long, indeed, since the latter had a *royal* celebrity. To the quiet, though persevering and efficient philanthropy of the Society of Friends is Great Britain mainly indebted for the present enlightened system that directs the management of her asylums; and the name of Tuke will not be forgotten by a nation that justly cherishes the recollection of a Howard.

The investigations by a committee of the House of Commons in 1816, developed such an amount of enormities actually practised in some of the lunatic asylums, that a general reform in these establishments throughout the kingdom was determined upon. Since that period, various salutary statutes have been enacted for the relief of the insane, and for the better organization of public and private institutions. A law has been passed, authorizing, but not obliging, each county in England to construct a Lunatic asylum. All the buildings erected under this act are of a much higher order than those in existence previously. They are constructed according to the modern views of classification and regimen, and their inmates are treated on the most enlightened and liberal principles. But in Ireland the system of pauper lunatic asylums is most complete, and we think we shall be borne out by facts in saying, that as a whole, the hospitals for the insane in that country approach nearer to perfection than those of any other. The founder of this system is the Hon. T. Spring Rice, whose exertions in behalf of his native land, have in this respect, at least, been eminently successful. To insure to every part of the Island the benefits of a general law, Ireland was divided into eight districts, set apart according to the population; and each of these districts obliged to supply itself with a pauper lunatic asylum, which, together with those already established by the munificence of benevolent individuals, are supposed to be sufficient for the wants of this unfortunate class. It is in contemplation, as a part of the general plan, to put up a separate building in each district, for such patients as have passed a certain period under treatment in the asylums already in use, and have been pronounced incurable. Each of these district establishments is under the direction of a committee, named by a central board at Dublin; which originates all new measures, supervises the finances, appoints officers, and, in fine, passes upon every important act submitted to it by the local trustees. The plans of these buildings are in general very good, and they are well adapted to classification, ventilation and convenience. Had M. Ferrus visited Great Britain a few years later, and extended his exa-

minations to Ireland, he could not have failed to eulogise her institutions for the insane. If their general plan and organization be worthy of commendation, the manner in which they are conducted is still more so. A proper degree of economy reigns over all, while an unsurpassed cleanliness pervades every department. The helpless inmates are treated with the utmost kindness, and are supplied with the means of useful occupation. The loom, the spinning wheel, the needle, the spade, the trowel, the plane, the saw, and other implements, are here seen in the hands of the insane. The result cannot but be highly beneficial to those employed and to the public. If the subject and limits of this article permitted, we could particularize those institutions that struck us as being models of excellence.

To return to the asylums of England; it was mentioned that a law was passed *authorizing*, but not *obliging*, the counties to establish pauper insane institutions. The consequence of leaving the local authorities to judge of the expediency in this matter is, that many of the counties are without any provisions for the comfort and treatment of the insane.

Previously to the enactment of this law there existed, in various parts of England, lunatic hospitals, which had been established by associations of public spirited individuals, and in which the middling classes, paying for their own board, were received and treated with the poor supported by public charity. Several of these are still in existence. This is a radical defect; and, in a country containing a large number of lunatics belonging to each class of society, is without any reasonable excuse. It is a vice which yet necessarily exists in our own country, but it is hoped the different States will soon have a sufficient number of strictly pauper asylums for the relief of other establishments; and in the former, none but the destitute should be received; for, says our author,

"How can perfect order be introduced into an establishment where there is inequality in the station of the patients, and in which the poor, supported by the charity of parishes, are placed by the side of men paying a considerable rate of board; witness the superior accommodation of the latter? We can readily judge of the impression produced upon the indigent by an *apparent* injustice which it is impossible for him duly to appreciate, or of which he can not see any satisfactory explanation."

"Let us not forget to observe that it is in this kind of establishment above all, that the want of a unity of action, and of a firm and constant direction, is so perceptible; and that, moreover, the authority and even zeal of the physicians are so often counteracted by the superintendents or directors; and sometimes even paralyzed and shackled by the subscribers or founders, whose knowledge is usually far from equalling their charity."

Our author, who visited the principal lunatic asylums in England, gives a short sketch of *each*, through which we will not follow him; but content ourselves by presenting to the reader a comparative view of two of the most celebrated—the one the most *ancient*, the other among the most *recent* of British establishments; viz. Bethlehem and Hanwell, both belonging to the metropolis. "In the year 1547 the priory of Bethlehem was given by Henry VIII. on his death-bed to

the city of London, and a few years after set apart for the treatment of the insane." In 1675 this house was rebuilt by the city of London, after the plan of the palace of the Tuilleries, which gave great offence to Louis XIV. In 1812 its location was changed, and the present hospital erected, at the immense expense of about half a million of dollars. Its annual proper income is $90,000, besides $13,000 from government for the support of criminal lunatics; so that none of the inmates are maintained by their friends. It has beds for 260, of whom 60 are criminals.

Although the building presents a magnificent facade, and every part of it is on a scale of grandeur which few or no similar structures approach; yet the unplastered brick walls of the cells, the small loop-hole windows at the top of the ceiling, and the iron gratings, impress the visiter with a feeling that he is in a prison. The predominant idea of the architect seems to have been that he was forming a plan for the confinement of 60 criminals, and not for the reception of 200 innocent beings deprived of reason; while in the general bearing of the officers towards the patients, and in their manner of receiving visiters there is a perfect harmony with the design of the artist. It is to be hoped that the spirit of reform which has of late years been prevalent in England, has had its proper influence in the government of this splendid charity.

When we visited it some five years since there was a degree of reserve, suspicion, arrogance, and want of common civility on the part of the resident medical officer, whose duty it was to accompany us, that was equally amusing and offensive. Our examination of the various parts of the establishment, which was made from other motives than those of idle curiosity, necessarily suggested many questions. These were from time to time answered very cautiously and abruptly, until the suspicions of the gentleman were no longer controllable; when, fixing his eye upon his unsophisticated questioner, like some awful magistrate of the police about to fasten guilt upon a suspected evil doer, he exclaimed, "what do you mean, sir?"—"what do you wish to find out?" There may have been something national, something of "the universal Yankee nation" both in the manner and number of our queries, and we therefore disclaimed any design against the institution. The reserve of this individual as to the means of management and medical treatment, reminded us of a remark of one of the most distinguished surgeons of London, "that there was more mystery and quackery in the treatment of the insane, than in any other branch of the profession."

A very absurd custom prevails here, as in other similar institutions in England—that of requesting every casual visiter to write, in a book kept for the purpose, his opinion of the establishment, after hastily running through it. This is too much like inviting a man to partake of your hospitality and then asking his opinion of your table. It would be uncivil to say any thing disparaging, so the book is nearly filled with indiscriminate eulogium. Occasionally, however, when the

visiter happens to be more discerning and conscientious, the establishment is "damned with faint praise."

Considering the munificent endowment of this charity, and the advantages of professional ability which it ought to possess in a city replete with medical talent, it is far behind the age.

Little has been done for the purpose of employing the patients and diverting their minds from the subjects of morbid thought. We do not remember to have seen either work-shops for manual labour, or a reading-room or games of amusement. The grounds though large for an institution located in a city, are too contracted for the recreation of so great a number of patients, and the everlasting view of brick walls cannot but be irksome.

Though this establishment can accommodate as large a number as 260, only from 220 to 250 were there at the period of our visit. If the large income be divided by the first number, there will be a result of more than $7 50 cents per week for each patient. When we compare this with the rate that parishes pay in the same county to the Hanwell asylum for the support of their paupers—(a sum under $1 50 cents)—and when it is considered how much better they are treated than the pensioners of Bethlehem, how much more liberty they enjoy, and how much more rational and curative their management, we are surprised that the "ancien régime" of the institution in question is still suffered to exist. It cannot be possible that the whole income is expended; and if not, why are not the accommodations extended? According to the present system none but curable patients are admitted into the civil department; and if they do not get well at the end of a year, are turned out. But as at St. Luke's (an institution of far less pretensions, although under much better management,) there is a distinct class of *incurables*, composed of such patients as may have once belonged to the *curable* class, and of such others as may through favouritism have gained admission. This class might be very advantageously enlarged: work shops and other means of employment might be arranged for their use, and by their labours they might make some return to the institution for their support. But situated as Bethlehem now is, so imperfect are its internal arrangements that it would be improper to increase the number of its curable patients, when these may be so much better treated in establishments out of town.

We turn with feelings of relief and pleasure to the Hanwell Asylum, which has been instituted within the last six years, under the auspices of the magistrates of Middlesex, (according to the act of parliament before referred to,) for the insane poor of the county.

It is situated about eight miles from town, in a fertile and highly cultivated part of the country, surrounded by an ample enclosure of land for the purposes of gardening, and of furnishing the patients with suitable employment, and constructed after the most approved principles of architecture.

The inmates are suitably divided into classes, well clothed and fed, and supplied with various means of occupation suited to their

tastes and habits. They are under the enlightened and benevolent superintendence of Sir William and Lady Ellis, to whom more is perhaps due than to any other two individuals for the present improvements in the management of pauper lunatic asylums in England, and especially for the system of industry that now prevails there. Their manner of treating the unfortunate under their care is strictly parental, and the paupers of London, who may be supposed to be among the most depraved of the class, are governed with so much humanity, and are surrounded by so many examples of industry, that they are soon taught to respect themselves and to undertake some useful occupation that contributes in the most direct manner to their final recovery. By the last annual report of this establishment, it appears that in this community of 570 insane patients, no less than 320 are on an average employed. Their occupations are various, such as spinning twine, making baskets, picking, carding and spinning wool for mops, manufacturing straw hats, bonnets, &c. &c.; and we are told by Sir William in his report this remarkable fact, "that six persons have also been taught to make shoes within the year, who before were totally ignorant of that business." In addition, great numbers are employed in horticulture and labour in the open air. A chapel forms part of the institution. Here, besides the weekly services of the church, such patients as are in a suitable state, assemble like the members of an orderly household for morning and evening prayers. On these occasions the director conducts the devotional exercises, which can not be too much praised; their periodical return gives an order and system to the movements of the house; their solemnity impresses the insane with a proper sentiment of veneration that cannot but have a salutary influence on their hearts and minds; they are taught the important lessons of self-respect, humanity and self-government; they learn that they are not forgotten, and that if they can curb their wandering thoughts and restrain their wayward actions during the delivery of a sermon or the offering up of a prayer, they *may* do so for a still longer period, even when left to themselves. When we accompanied the director and matron through the various galleries and grounds, we were struck with the satisfaction which the performance of their duties seemed to give them, with their parental kindness, and with the respect and attachment of the patients to their persons. The best evidence that can be given of this is, that the matron does not hesitate to go unattended through galleries containing two or three hundred male lunatics from the lowest population of London.

In fine, when we consider the eligible site of the Hanwell Asylum, its construction, the distribution of its various parts, its adaptation to its object, the benevolent, liberal, and judicious policy which is every where seen in its management, and the never failing kindness of its officers; and when we on the other hand contemplate the confined location and imperfect construction of Bethlehem, the prison-like aspect of all its parts, and the destitution of the means of employment, together with the mean spirit that directs its administration and in-

spires its officers, we are reminded that while the former is a monument worthy the philanthropy of the present day, the latter is a monument of the barbarous benevolence of the age of Henry VIII.

Though it was our intention to pass unnoticed all the provincial and county asylums of Great Britain, we cannot forbear mentioning those of York, Lancaster, Glasgow, Perth, Dundee and Wakefield, as institutions under admirable management.

In examining British establishments for the insane, and particularly the institution last named, we were forcibly struck by one fact which it is believed has no parallel in any other country—the signal influence of woman in their management. Other countries have their sisters of charity, who are generally persons of limited education, destined from early life to fill subordinate stations, for which they have been specially brought up, and who are seldom found within the walls of lunatic asylums, and never in those occupied by males.

But England is the only country within our knowledge where females of cultivated minds and enlightened benevolence are seen to exercise, in institutions of this kind, a controlling influence. And why should not the attention of this sex to which the world is so much indebted for the propagation of various schemes of benevolence in distant lands, be directed to charities at home? Men may construct proper buildings for the insane, investigate their diseases philosophically, and apply to them the rules of art and the lessons of experience, but it is the more peculiar province and power of woman to enter into the feelings of the unfortunate, and to console the afflicted—and her sympathy and kindness are frequently more efficacious in ministering to a mind diseased than the science of the physician, or the drugs of the Materia Medica.

The Wakefield Asylum contains above 300 patients of both sexes, who are all paupers from the lowest classes of society. One of the most active and efficient personages in the management of this institution is a lady in the prime of life, endowed with superior intelligence and refinement of feeling and animated by a noble benevolence; she entered upon the duties of her station determined to sacrifice the prejudices of education in the great cause of philanthropy. She may be seen visiting the various parts of this great establishment, superintending its domestic concerns, traversing the male department frequently unattended, soothing the disconsolate, encouraging the humble, rebuking the insolent, ministering to the sick, and carrying with her, wherever she goes, order and comfort and consolation and peace.

M. Ferrus after completing his observations on the most important of the English establishments, and on the only two of note which at the time of his visit existed in Scotland, and finding in them much to praise and something to censure, returns to those of his own country. He remarks, it was not until the beginning of the seventeenth century, that the insane inspired any sympathy,—that Vincent de Paul was the first who preached in their favour with enthusiasm, and that from this period they began to be admitted into the hospitals, where,

however, they did not for a long time receive that kind of treatment which their condition required.

"For the first step towards the amelioration, or rather towards the formation of a suitable medical treatment, France is entirely indebted to Tenon, who in a memoir published in 1786, attracted the attention of a great number of philanthropists. At the head of these should be placed the venerable la Rochefoucauld."

"In 1791 this virtuous citizen made to the *assemblée constituante* a report, whereby he disclosed the miserable state in which the insane were then languishing." "Some years after, cells designed exclusively for insane females, were constructed at the general hospital; but these cells may now be regarded as a monument of barbarity; low, damp, cold, built too close to each other for a free circulation of air, without any means of heating them," &c.

During the years which immediately followed the report of la Rochefoucauld, and which were marked by such unparalleled political commotions, far more instances of insanity were noticed than had ever before been known to exist. This, though owing chiefly to the moral tempest that was sweeping excitement and desolation far and wide, and which reached every class of society, may be in part accounted for by the direction of public attention to the subject.

"The difficulty of properly treating the insane at the Hotel Dieu, determined the government in 1802 to place them provisionally at Charenton; from whence, after a sojourn of three months, the incurables were sent, according to their sex, either to Bicêtre or the Salpêtrière. These two latter establishments subsequently became the only places of reception for the insane, whether of the curable or incurable classes, and thereupon underwent great ameliorations."

"Suffice it to say, thanks to the impulse given by Pinel, and to the enlightened aid of the physicians who applied his precepts, the proportion in the number of cures rapidly increased in the hospitals of Paris. This example brought about a very desirable amelioration in some other parts of France, yet there exists even now but a very small number of special establishments for the treatment of insanity."

M. Esquirol, whose writings on insanity have ranked him among the first physicians of the age, and whose philanthropy equals his talents, presented in 1819, to the minister of the interior, a memoir in which he recommended that lunatic asylums should be established in all cities where "cours royales" were held. This proposition has not yet been acted on, and the want of proper establishments is still felt throughout France.

"In those which receive indiscriminately all sorts of sick, the insane are generally placed in damp, dark and disgustingly filthy cells; the doors and windows are loaded with iron, and present a most frightful aspect. The beds are usually made fast to the walls, and are altogether unfit for the repression of the furious. When it is necessary to fasten a patient upon his bed, enormous rings of iron attached to the wall are had recourse to, while in some places these unfortunate beings are bound in an erect posture by means of girths to stakes or to the wall."

"In the prisons the condition of the insane is still more deplorable, for they are there continually exposed to the jests of the vicious who fill these establishments, and who for the most part amuse themselves by ridiculing the delirium of their fellow prisoners."

It is feared that this picture of the condition of the insane in France is not too highly coloured to represent their state in this country. The number of lunatics in the different states who require restraint and treatment is becoming large, while the proportion of asylums for their accommodation is comparatively small. In many of the states indeed there are no institutions at all, and in not one of them, it is believed, are they sufficiently numerous or extensive for the reception of all who should properly fall under their care. The consequence is, that there are probably at this moment, hundreds confined in jails and other improper receptacles; and many loaded with chains and treated in such a manner as to render their maladies incurable.

Though the special establishments of France are not what they should be, yet through the labours of the talented, learned and excellent Pinel, of Tenon, Thouret, Amar de Lyon, and Desportes, their condition has been much improved.

Our author next passes in review the various hospitals for the insane in his own country.

The emphatic remark, so often made, of the great French metropolis politically, that Paris is France, may with equal truth be applied to her institutions of science, medicine and charity. It is admitted by the French themselves, that out of the capital there is scarcely, with the exception of those at Rouen and Bordeaux, a well organized lunatic asylum. There are very few special establishments throughout the provinces, and those actually in existence are decidedly inferior to the asylums of Great Britain and Ireland. As before mentioned, in France large numbers of lunatics are confined in prisons and general hospitals.

We will not follow M. Ferrus in his descriptions of the various provincial receptacles for the insane, but select at hazard that of a single one, in order to give the reader a general idea of these establishments.

"Arriége.—The poor-house established at Saint Lizien receives all the insane of the department of l'Arriége. For the indigent (and these form the greater number) the treatment is gratuitous; for those who are able to pay, the price of board is fixed by the prefect, according to the means of each one; the sum, however, never being more than two hundred francs a year. The jacket, fetters to the feet, chains and hand-cuffs are employed as means of coercion. The diet consists of soup and fresh vegetables, and twice a week the patients receive in addition an allowance of meat. The pay patients and octogenarians alone have a small ration of wine.

"The insane are visited every day by the physician of the establishment, and the surveillance and service of these unfortunates are confided to special nurses, under the inspection of the director of the house. Each section has an airing-court and a warming place. The harmless patients enjoy full liberty in the extensive yards—they are all lodged in an isolated building of a single story in height. Both admission and discharge are ordered by the prefect. When the patient is cured his discharge takes place upon the report of the director; when not so, by the request of his family."

The three great establishments for the insane in France, belong to

the department of the Seine, which includes Paris. They are the royal hospital of Charenton, the Salpètière and Bicètre, and are located either within the walls of the city or in their immediate vicinity.

La maison royale de Charenton is a government establishment, and is under the immediate direction of a commission of five appointed by the minister of the interior. Insane officers and soldiers, as well as citizens, are received here. For the two former, government has provided and pays annually for their support 40,000 francs. The latter are supported by their friends and pay from 300 to 1300 francs per annum. Besides these sources of support, the establishment has a revenue of its own, amounting to 15,500 francs. Both males and females are admitted, and the number of patients usually varies from 480 to 500. The various buildings of which this establishment is composed, presenting an irregular and indescribable appearance, are situated between the villages of Charenton and St. Maurice, on the north side of the river Marne, not far from its junction with the Seine. They are placed pile above pile on the hill-side, which rises abruptly from the flat strip of land immediately on the margin of the river. Having been originally constructed and used for a monastery, the buildings, like most of the lunatic asylums on the continent of Europe, are extremely irregular and imperfectly adapted to their present purposes; but such modifications have been made, and so many new parts added, that classification is now complete.

An entire new building on the most munificent scale, and at the expense of 800,000 francs, has been erected within a few years, for the exclusive accommodation of such female patients as may be convalescent, or in a state to enjoy a certain degree of liberty, and to derive advantage from associating with others. This is called the third quarter. It is entered by a long avenue, lined with two rows of Linden trees trained in the French style. This leads to the principal staircase, which extends the whole breadth of the building, is easy of ascent, and is adorned with urns of cast iron, painted to resemble porphyry. On reaching the top and turning to the left we find ourselves in as delightful a court as can well be imagined for a lunatic asylum.

As mentioned before, this establishment is on a hill-side; which, in many respects, is favourable, being dry, sheltered from the north wind, and affording an extensive prospect. The building is of light coloured stone and encloses a square of 100 or 150 feet, around the whole of which extends a colonnade or piazza. The structures on the north and west sides are three stories, that on the east one story, while on the south is an open colonnade so guarded by ornamental grating as not to be in the least offensive to the eye, and affording one of the richest prospects that ever greeted the view. Overlooking all the rest of the buildings and the public highway, the beholder sees the valley of the Marne and its river, with its various bridges, rich plains, luxuriant vegetation, verdant groves, country seats, distant villages with their spires, and in fine every thing necessary to constitute a

varied landscape. The court itself is adorned with grass and shrubbery and has a fountain in its centre. From the landing-place above mentioned we proceed through a long dormitory with eighteen beds to the north extremity of the west side, where is a setting room. Here such patients as are industrious are seen employed in knitting and sewing. From thence we pass along the open colonnade on the south to that part of the building which faces the west side of the square. One part of the ground floor of this side is a dormitory, the other a hall where the patients take their meals or sit during the day and sew. The dormitories which are for a number of quiet patients are kept in an unsurpassed state of neatness. The beds are in the best French manner, with curtains, and each one is supplied with a chair, night table, &c. But the floors are of glazed brick, uncovered by carpets. The hall is well furnished with sofas and chairs of a light yellowish coloured wood, that give it a neat and airy appearance. Both dormitories and halls are warmed by ornamental earthen stoves. A wire netting forms the only security to the windows. That part of the building fronting on the north side of the court is divided into small rooms, neatly furnished and occupied by single patients. These chambers have each a window which opens under the colonnade. They are entered by means of a long corridor, extending the whole length of this part of the building, into which doors open. The stairway is constructed in the ordinary manner and guarded by wire-work. In the upper story are dormitories. On the north side and over the small rooms already mentioned, are private apartments with cabinets remarkably well furnished and commanding delightful prospects. These are destined for those patients who prefer greater retirement and are able to pay a high rate of board.

The bathing-room belonging to this quarter of the establishment is a model.

Adjoining this building is an extensive garden tastefully laid out, and adorned and shaded by shrubbery and trees.

A building on a similar plan is in contemplation for convalescent male patients.

The garden of this latter class is already every thing that can be desired. It is extensive and beautifully diversified, covering some 8 or 10 acres, extending to the summit of the hill in the rear of the buildings and joining the "Bois de Vincennes." The walks are numerous and lined with young elm and linden trees. Some command extensive and luxuriant landscapes; others are retired, and others again lead to clumps of trees tastefully grouped. Benches are distributed in various parts. Here patients are seen resting in listless attitudes—there they are walking under the shade and discoursing like so many philosophers—while yonder, another one is reading either alone or to a circle of listeners, and not far distant perhaps a party is sitting on the grass engaged at cards.

We have been particular to mention this pleasure ground, because it is so much superior both in beauty and extent to any thing of the

kind either in Europe or America that we hope it may be imitated in some of the institutions about to be established in this country.

Having said thus much of a small part of one of the best conducted institutions of the kind in the world, our space obliges us to dispense with any further remarks on the subject.

La Salpêtrière.—This establishment, though within the city walls, is in a remote part of Paris, on the south side of the Seine, and not far from the Garden of Plants. It is an hospice for the reception of the aged, infirm and indigent, as well as of the insane, being exclusively devoted to females. On the first of January, 1834, no less than 1670 lunatics of this sex belonged to the division of the insane. The numbers are increasing annually, and it is a remarkable fact that there are more than twice as many females in this, as there are patients of the other sex in the great receptacle for the male pauper lunatics of Paris.

Since the days of Pinel, who began the reform in the mode of treating the insane in France, the Salpêtrière has been regarded as a model. "But it must be admitted that for some years past it has stopped in its progress of improvement. The section of the imbecile, and that of the epileptic are the only ones that are isolated, and these are imperfectly so: the incurable and the insane under treatment communicate together, or rather are confounded; the baths are common to both, &c."

Of this immense number of female lunatics congregated together, comparatively but a few are curable and under treatment. On this class, of course, the greatest attentions are lavished, while the incurable, the idiotic, the paralytic and epileptic, though treated with kindness, are necessarily left very much to themselves. The consequence is, that the want of employment has begotten the worst habits. We can never forget the only visit we made to the most abandoned of this class in what is called the "grilles" in company with the physician. Man deprived of reason and placed in an isolated situation is reduced to a mere animal—how degrading to human nature the spectacle! how infinitely more so when such animals are collected in large numbers and their worst passions elicited by the intercourse!

With the best possible management the inmates of this establishment can never be as comfortable as they should be. Fourteen hundred incurable in addition to two or three hundred curable lunatics are more than can properly be taken care of in one establishment. It is impossible however to say how great an amelioration may be effected in the condition of the insane at Salpêtrière by the introduction of suitable employment. The physician in chief is M. Pariset, a gentleman distinguished alike for his great learning and the urbanity of his manners.

Bicêtre.—It is of the insane department of this great hospice that our author is physician in chief. Pinel began his labours here, but abandoned it for the more extended theatre at Salpêtrière. From his day until recently Bicêtre underwent no improvement; but since M. Ferrus has been at its head it has taken the lead of Salpêtrière. New

buildings have been added or appropriated, additional courts attached and the classification thereby rendered much more perfect.

It is now the prevailing opinion in France that all buildings for the insane should be limited to a single story. Upon this principle all the recent improvements at Bicêtre have been made. A new section, called "le cour de traitment," is arranged in this way, and is a model of its kind. Two rows of lodges are arranged on two sides of a court about a hundred feet square, joined together at one end by a solid wall built up so as to entirely exclude observation from without, and at the other by a light open iron railing, leaving to the patient a constant view of an extensive and beautiful landscape, including the village of Gentilly. A colonnade extends around the whole court, affording a delightful shelter from the sun and rain.

Among other improvements at Bicêtre is one which should not be overlooked in the construction of asylums in our own country. It is that of providing a place for newly admitted patients until their actual state may be learned by observation under the eye of a suitable person.

M. Ferrus observes, "at my request the admission of the insane will be henceforth considered only as provisional. For many years past a ward conveniently disposed, has received all the new comers who remain in this place of trial until their state is well ascertained."

But the most important improvement introduced at Bicêtre is the appropriation of a farm at a distance from the establishment to such patients as are convalescent, and may be benefitted by agricultural and other pursuits. This is a most benevolent conception, and if carried out, will perfect the course of treatment at this hospital.

The third chapter, which is devoted to the construction and internal arrangement of asylums for the insane, is so interesting and so full of instruction, that it is hoped we shall not be censured for making copious extracts from it.

"M. Desportes in his project for an insane hospital, published in 1824, assigns twelve different sections for each sex:—1. The furious under treatment. 2. The furious incurable. 3. The tranquil under treatment, to be placed in lodges (cells or single rooms.) 4. The tranquil incurable to be placed likewise in lodges. 5. The furious epileptic insane. 6. The tranquil epileptic insane. 7. The tranquil epileptic insane under treatment, to be placed in dormitories, i. e. in large sleeping apartments containing many beds. 8. The tranquil incurable insane to be placed likewise in dormitories. 9. The melancholic. 10. The imbecile. 11. Accidental diseases. 12. The convalescent.

"This classification may be used for the insane as they are generally managed, and may be applied to Bicêtre as at present organized. To reduce it to practice in a hospital destined to receive those only under treatment it would require modification, but would it be useful even in Paris to create a hospital of this kind? There is no doubt that it is a duty almost incumbent on the capital to found an asylum that may serve as a model in this species of architecture. I do not think, however, that it should be exclusively reserved for those patients who may be considered evidently curable; would there not in fact arise serious inconveniences from placing in distinct establishments the curable and incurable insane? The latter would find themselves, if we may be allowed the expression, abandoned; and by their isolation we should be deprived of the ad-

vantages of a comparative study of the different degrees of the disease; a study which is so necessary for the progress of science.

"But if it be advisable to bring together in the same institution all the varieties and degrees of nervous disorders, it is no less important to limit the population which a house destined for the treatment of these diseases should contain. This population should never be so numerous that a single physician may not direct the medical department, superintend even the most minute details of the service, and have a perfect knowledge of all the incurable and other patients. It is important, therefore, to have distinct establishments: first, for the sexes, and then for the different classes of society. To place together in the same situation both men and women, would be to open the door to the worst abuses, for it would be impossible to prevent entirely all communication. This would be a great inconvenience to the patients, as well as to the persons charged with watching and serving them."

Though we entirely agree with the author, when he says the number of patients in a lunatic asylum should be limited, we dissent from him in his proposition to separate the sexes. It will be admitted that one of the best maxims for the management of the insane is, to treat them as nearly as possible like persons in their senses. Now, as it is generally considered that nothing tends more to perfect civilization than a proper social intercourse between the sexes, it would be very unphilosophical to deny the insane what is conceded to be useful to mankind at large. Besides, we do not hesitate to call in experience to the aid of reason: who that has had the management of the insane in an institution where both sexes are received, has not witnessed the decided advantage of bringing them together at the table, at social parties, and even at the dance? The physician cannot offer his patients any thing more likely to check their wayward propensities or reconcile them to their deplorable situations. Besides, to use the author's own argument applied to different degrees of the same disease, if males and females be separated, we shall lose the advantages to be derived from a comparative study of insanity in the different sexes. M. Ferrus goes on to speak of the impropriety of placing the rich and poor together in the same house. The difficulty of classifying patients in large establishments where they are all of the same grade in life, is so great, that it has seldom, if ever, been done satisfactorily. When in addition, various grades, according to compensation and other circumstances are established, it becomes almost impossible to make even a tolerable classification. It is humiliating to the affluent and educated man, who, though partially deranged may have a morbid degree of self-esteem and sensibility, to find himself under the same roof and in the frequent presence of the public pauper and the vulgar. Then, on the other hand, how much heart-burning and jealousy do the privileges of those more favoured by fortune occasion in the poor.

Many states of the Union are now taking measures to establish public asylums. Let them keep in view the importance of not confounding pauper with pay patients.

The following observations of M. Ferrus on the number that a lunatic asylum should contain, are worthy of translation.

"The number of persons that a hospital for the insane should accommodate

depends upon the state of these admitted. An asylum intended for the treatment only of mental diseases, should not contain more than a hundred and fifty or two hundred, if they be of the same sex, and twice this number if of different sexes, for in the latter case the service should be divided between two physicians, whose duties should be as distinct as every other part of the service.

When the population consists of patients of a single sex, but of whom some are under treatment, others idiots, incurables, &c. the number may be considerably augmented without disadvantage, provided the service continue to be directed by a single physician properly seconded. Experience has shown that in this case the number of insane in the same establishment may amount to six or seven hundred, that each patient may be frequently visited, and that the medical history of each may be traced with sufficient regularity. Such is very nearly the amount of insane population at Bicêtre; a population which has not increased since 1826, and in which are not reckoned more than a hundred or a hundred and twenty sick, whether of the insane under treatment, or of persons attacked by incidental diseases. I think, however, that in bringing together individuals of the same sex, and of the same rank as to fortune, it would not be proper to place in the same house more than four or five hundred, including the incurable as well as those under treatment."

In speaking of the asylums of England, our author remarks,

"Wherever I went, I found the buildings several stories high, in many instances evidently constructed after the models of penitentiaries, without suitable internal subdivisions, and with airing grounds far too circumscribed."

The following is a sketch of *his* plan for an asylum:—

"Around a common central point where all the general offices, as well as all the means of supervision should be united, I would have ranges of cells (corps de logis) for the noisy and excited, and buildings of a different model for the quiet. The cells intended for noisy patients to consist of two rows of lodges placed on the ground floor and united by a common gallery, serving the purposes of a covered walk. These cells starting from the central building, (where will be placed the bathing-rooms, the infirmaries, the parlours, the pharmacy, the clothes-presses, (lingerie) the kitchen, and the chambers of the principal officers,) to radiate from a common point, and to be separated from each other by gardens. This plan of building would keep off from the centre of the establishment the most excited and noisy patients. Some of those who are quiet, and those attacked by incidental diseases, located in the upper stories of the central building, would be found at hand if their condition should happen to require assistance.

"At the extremities of the rays formed by the cells for the furious, other buildings should be constructed for the accommodation of quiet patients. These buildings should also be surrounded by gardens, and so placed as not to command a view of the apartments of the violent."

We do not give the general outline of the author's plan as one we would recommend for adoption in this country, but as one from which some useful hints may be taken, and which, with a complete design, may be consulted in the original.

The following are the author's observations on the proportion of cells and dormitories that a lunatic asylum should contain, though we do not fully agree with him in his views on this subject. We do think, however, that in every establishment of the kind there is a certain number of patients who may with advantage lodge in the same rooms, but this number must be a small minority.

"The number of single rooms or cells should be calculated on the proportion

of patients under treatment, and particularly on the amount of acute cases the house is destined to receive. In establishments which admit only the insane under treatment, cells should be prepared for one-fourth of the population; in those intended at the same time for the insane under treatment, for incurables and idiots, single rooms should be provided for one-tenth; and for a fourteenth only (such is my opinion, judging from the requirements of Bicêtre,) in houses which receive in addition epileptics. It is obvious then that the number of cells does not follow that of the inmates, where these are composed indiscriminately of the epileptic and the insane. This disproportion arises from the fact that epileptics cannot be placed in cells even when delirious."

"If a paroxysm suddenly seize them, and they be left without necessary assistance, they may by a fall, or the position taken in falling, die of cerebral congestion or of actual asphyxia."

"Imbecile and incurable patients, who are not too much excited, are better off in dormitories where the supervision is general, and in these they should be allowed to remain only during the night. It would be unnecessary then to establish cells for them. Neither should melancholics be isolated, for they require that kind of excitement which may be derived from the society of other patients less abstracted than themselves; and the reunion of a certain number of lunatics, when their vicinity is not manifestly dangerous to each other, may frequently be effected with advantage. Among other benefits we may expect the return of natural affection; for egotism and vanity, though much exaggerated in the insane, do not generally prevent them from feeling, and that most sensibly, commiseration for the misfortunes of their fellows, and from rendering them services which often require great humility."

"As to convalescent patients, it will also be advantageous to place them, as well as those who, without being under hallucination, are under the influence of needless fear, in common sleeping rooms."

Chapter IV. is devoted to the consideration of the hygienic and moral management of nervous diseases. Our author here speaks of the manner of preparing beds for and of restraining violent patients. In these remarks there is nothing new. He next discusses the subject of classification, and proposes distinct apartments for those whose temporary delirium may depend on acute disease of the brain or the abuse of strong drink. He then proceeds to the consideration of various important particulars in the management of the insane; such as those of warming the buildings in which they lodge, of supplying them with comfortable clothing and proper diet; of the means of coercion, of religious services, of employment, as assisting in their discipline and cure, &c.

We will not stop to examine distinctly each of these subjects. Religious service is now very generally considered as a most valuable auxiliary in the moral treatment of the insane. In this country it was first introduced at the Bloomingdale Asylum, near New York, where it is still continued with the best effects.

But the most interesting part of this chapter is that which contains our author's observations on the employment of the insane.

"It has been remarked," says he, "in every country, that in those establishments in which the insane have been employed at bodily labour, the cures are more numerous than in those where patients only of a more elevated rank or of greater wealth are received, and in which no exercise of this kind is pursued. At Wakefield, at York, in the Quaker's Retreat, as well as in many other

establishments in England, labour is considered as one of the most valuable curative means. I have made myself, on a large scale, a happy experiment of its efficacy as a means both of discipline and cure."

"However much labour may be every where extolled, it is in fact seldom practised; and with the exception of Bicêtre, la Salpêtrière, and the asylum of Saint Yon at Rouen, where a young physician of talents and great zeal has introduced all the recent improvements, this method of cure is not to my knowledge extensively employed in the institutions for the insane in France. At Salpêtrière the patients are occupied either in some details of the service, or in knitting or sewing. Great numbers are indebted to this excellent custom not only for a well confirmed restoration to reason in place of an uncertain convalescence, but for the means of subsistence when they leave the institution; which saves them from the necessity of following too laborious an employment, and which, by providing against the dread of misery, shields them from the influence of the most common cause of relapse. Unfortunately, I repeat it, this practice is far from being general. In establishments for insane poor, both the necessary resources and suitable places for labour are generally wanting; in those for the insane belonging to opulent families, these means would abound, but the want of practice in manual labour, and, above all, the overweening pride usually accompanying this species of disease, have hitherto rendered useless all attempts of the kind. These, I think, should be perseveringly repeated in the treatment of a disease often incurable—a disease which reduces the rich and the poor to the same condition; and in introducing the proposed remedy we should employ all the resources of persuasion, and, if necessary, even of severity. A means of cure confessedly efficacious for the one class, should not, upon frivolous motives, be neglected for the other."

"At Bicêtre, during the last eight years, taking advantage of the various kinds of work there executed, and daring to assume the responsibility of placing in the hands of the insane the necessary instruments, we occupy daily, when the weather permits, more than a hundred and fifty lunatics at labour on the terraces, at horticulture, at mason work, at plastering, at blacksmith work, at joining, and even at timber work. No accident has yet happened to lessen the satisfaction experienced in seeing our patients labour, and it would take a most unexpected and severe one, to balance the advantages of employment. The health of the insane and their general condition has been improved by this measure; their recoveries have been more rapid and their relapses more rare. A maniac placed at the wheelbarrow a few days after admission, and just as he is beginning to recover from a violent attack of delirium, may, profiting by a temporary repose from labour, throw his cap into the air and give utterance to extravagancies; but, encouraged by the example of his fellow labourers, and by the exhortations of the attendants, he resumes his work, and at evening, on entering his chamber, falls into a most calm and refreshing sleep. A fact too remarkable to pass by silently, while speaking of the surprising effects of labour on the insane, is, that none of our patients have been in any way injured by the heat of the sun, although they have been exposed as ordinary labourers to its influence during the whole summer."

Profiting by the experience of the asylums at Wakefield and Hanwell, our author has caused to be prepared at Bicêtre a room where the patients may be employed at spinning and weaving. In common with every other person concerned in the management of the insane on a large scale, he urges the importance of occupation. The most striking fact derived from the recent reports of the best conducted asylums of those countries in the old world where these institutions are most philosophically and successfully managed, is the very large

and increasing number of patients usefully employed. Miss Martineau's beautiful account of the Hanwell institution would seem to be a creation of her own imagination; yet we can aver from personal observation that the proportion of useful labourers is almost incredible. The patients in this establishment are all paupers, and it is supposable that they have nearly all been accustomed to labour of some kind or other; hence the secret of the great number employed. By the last report of the Dundee Asylum in Scotland, it appears that during the past year the daily average number of patients in the house was 129, and that the number generally employed was 92. If by this it be meant that the daily average number employed was usually so high as 92, (and this we believe to be literally the fact,) this institution exceeds all others on record in the adaptation of employment to the habits and tastes of the patients, and in carrying out the great principle of occupation. No less than twenty-seven varieties of employment are enumerated, and among others "weaving linen for sheeting, cotton bagging, &c., breaking stone for the turnpike road, gardening, trenching and laying out ground, spinning, winding for weavers, shoe making and mending."

We have been particular to mention these facts, because several asylums for the insane poor are now being established in this country, and it is into these institutions especially that bodily labour may be successfully and extensively introduced. Shut up any number of persons in the full enjoyment of their mental faculties, without occupation, and it needs but little knowledge of human nature to predict how much unhappiness and mischief will be engendered. It is not surprising then that the insane, when deprived of liberty and doomed to perpetual idleness, should fritter away their existence in vain attempts to liberate themselves from restraint, or to carry into effect their favourite visionary schemes, or fall into a state of disgusting apathy, useless alike to themselves and to society. By employment, the recovery of the curable will be accelerated and confirmed, while the lives of the incurable will be rendered more happy and useful. The latter class forms by far the largest proportion of the inmates of our asylums, and if labour be not systematically introduced and thoroughly carried into effect in our pauper establishments, these will soon degenerate into mere lock-up houses. We believe we are not going too far when we say, that two thirds of the inmates of institutions of this description might be usefully employed.

The 5th and last chapter, containing some remarks on the ordinary modes of arresting the insane, or those supposed to be so, and projects of law for fixing the civil condition (*l'état légal*) of lunatics, we will not discuss, inasmuch as the subjects there treated are of local interest, and because we have already extended this analysis further than we had originally intended.

We cannot close the book before us without expressing our thanks to the author for the publication of so large an amount of useful information upon a subject on which so little is in general known.

When we look over our extensive country, and consider its

immense progress in civilization, wealth and luxury, the varied and increasing temptations to embark in the wildest schemes of speculation, the sudden accumulation and loss of fortune, the fluctuations of trade, the freedom of our institutions, the interest taken by almost every citizen in every political or financial movement that agitates the community, the intense activity of mind every where apparent, the fierce strifes of the predominating passions of ambition and avarice, involving so many minor ones and extending their influence throughout every class of society; we are compelled to believe, that we have among us as many active causes of insanity as any country in christendom.

If the few states which have made returns of their insane be taken as a standard for the whole, and if European statistics of insanity can be relied on, facts go to show that the proportion of lunatics to the whole population, is greater in America than in Europe. But we believe that European statistics of insanity *cannot* be relied on. The only country in which a regular and systematic plan of enumeration has been adopted is Norway, where the proportion of lunatics and idiots is one to every 551 inhabitants; a proportion considerably greater than exists in this country. In the other countries of that hemisphere the sources of information on this subject are partial and imperfect, being generally no others than hospitals and public and private institutions; so that the large number of lunatics living at home and in private families are not taken into account. It yet remains for us to learn whether insanity is more common in Europe or in America, whether national youth or national old age is most productive of mental disease. This is indeed a singular inquiry, and it is hoped that in the next general census, congress will take measures to ascertain the number of lunatics and idiots. It will also be important to learn how far diversity of climate, the various habits of the people in different sections of the country, and the institution of slavery, affect the mind.

We have no data upon which to form a correct opinion as to the prevalence of insanity among the aborigines. If it be possible to extend the census among these, some interesting results will doubtless be procured on various subjects.

Notwithstanding the want of general statistics of insanity in this country, sufficient is known to render it imperative on its citizens to rescue the wretched victim of mental disease from the dungeon and the chain. It is impossible to say how many thousands are now doomed to a night of mental darkness that will last until exhausted nature suffers a separation of mind and matter. All modern experience clearly shows, that insanity is a highly curable disease; more than this, it shows that where the insane cannot be cured, their physical comforts may be increased and secured in public institutions devoted to their interests, and that by teaching them to labour they may not only be made useful to themselves but to others.

As before mentioned, several states are now taking measures to erect asylums for the insane poor, and Massachusetts having already

led the way, has in full and successful operation an institution in all respects creditable to the intelligence and humanity of that enlightened commonwealth. We fear, however, that from the necessity of making immediate provision for the insane, our ignorance of the best models will prevent the formation or adoption of the most suitable plans. The treatment of mental disorders, where large numbers of persons are brought together, as in all public institutions, begins with classification. The first inquiry then, before any plan of building may be fixed upon, will be, into how many classes will the number and condition of our patients render it necessary to subdivide them? This involves several considerations, such as the separation of the sexes, of pay from pauper patients, and of the different grades of mental disease from each other. The first is so evidently proper and necessary, that in all architectural designs, provisions will be made for it as a matter of course. The second, for reasons already stated, is so important, that pay patients should be excluded from all state and other asylums intended for the treatment of paupers. Then there being but one class as to circumstances in life left, this can be subdivided into suitable classes, according to the mental conditions, the habits and propensities of the individuals who are to compose them, so that the whole internal arrangement and management may be comprehended at a glance. If on the contrary, persons from every rank in society, and paying every possible rate of board, be brought together under the same roof, confusion and perplexity will be the never ending consequence.

We will repeat it then, the first step to be taken in the construction of a lunatic asylum is to fix upon the number of classes it is destined to contain; if it is to be for six, or eight, or ten, then let there be as many subdivisions for each sex, entirely independent of each other, with distinct sleeping, sitting and eating rooms, with separate airing grounds, and without any necessary communication between any two classes. J. M.

ART. XI. *The Nature and Treatment of Dropsy: considered especially in reference to the diseases of the internal organs of the body, which most commonly produce it. Parts I. and II. Anasarca and Ascites. To which is added, an appendix, containing a translation of the work of Dr. Geromini, on Dropsy; from the original Italian.* By EDWARD J. SEYMOUR, M. D., Physician to St. George's Hospital, &c. 8vo. pp. 218: London, 1837.

It is only by pathological researches of a very recent date, that any very clear light has been thrown upon the nature of dropsy. These have shewn it to be in every instance a mere effect, consequence, or symptom of some preceding disease, especially of a change of structure in one or more of the internal organs, by the removal of

which, when practicable, can its cure alone be effected. In a large number of instances it has been found to depend upon an impediment or obstruction to the return of the blood to the right side of the heart; the impaired function of that organ being relieved by the effusion of large quantities of serous fluid, in particular localities where the obstruction is partial, but extending, sooner or later, through the whole cellular texture of the body, when the obstruction arises from disease of the heart itself.

These facts, which have modified very essentially the treatment of the different forms of dropsical effusion, it is the object of the work before us to enforce and illustrate, so far at least as it regards anasarca and acites. Although the author has not attempted a full and complete investigation of the nature and treatment of these two forms of dropsy, presenting merely a brief outline of his own view and experience, his observations are, nevertheless, of great practical value.

The views, as well pathological as therapeutical, which he advances in relation to anasarca, are unquestionably correct; but we cannot yield our assent to the correctness of the position he assumes when treating of the pathology of ascites, that the effusion into the abdomen is, in the greater number of instances, produced by pressure upon the vena portæ, arising from induration of the liver, being persuaded, from our own experience, that it depends more frequently than Dr. S. seems willing to admit upon sub-acute inflammation of the peritoneum. His observations throughout, are, however, of so interesting a character, that we have concluded to present, in place of a mere review of the work, a very full digest of its contents, in which we have, we believe, comprised every thing of importance they afford.

In the introduction, sketches are presented of three presumed cases of dropsy, for the purpose of illustrating the circumstances under which the disease most frequently occurs in hospital and private practice. The accuracy of these sketches will be recognised by every observing physician.

The first chapter opens with the following short statement of the author's views as to the immediate cause of dropsical accumulations in general.

"The proximate or immediate cause of dropsy, appears to consist in the secretion of fluid by the capillary arteries, nearly resembling the serum of the blood, more or less diluted, and in some instances approaching very nearly in consistence to the liquid secretion of lymph, which takes place at the conclusion, and is one of the terminations of serous inflammation."

The correctness of this statement being admitted, and it will not be denied by any one who has carefully investigated the subject, the next important inquiry is into the cause or causes by which the morbid secretion giving rise to dropsy is produced. So far as it regards anasarca, which is the first form of dropsy treated of in the work before us, the author, in accordance with the numerous well observed facts detailed by modern pathologists, refers the production of the morbid secretion into the cellular structure, to disease

1st, of the heart; 2ndly, of the heart and lungs; and 3dly, of the kidneys. There is also, he remarks, a certain condition of the vessels of the skin, occurring after cold suddenly applied to the surface of the body, or after these vessels have been long stimulated during eruptive diseases, in which the capillary arteries secrete a fluid precisely similar to that which is poured out as a relief to the congested vessels, in the organic diseases just referred to.

Œdema, which is the simplest form of dropsy of the cellular membrane, results either from tumours pressing upon the veins above the swelling, or from obstruction of the vein itself. The first occurs, for example, in one leg, in ovarian disease, accordingly as the tumour within the pelvis obstructs the return of blood through the iliac veins; the minuter arteries secreting fluid, which relieves the local congestion. If the tumour change its place, or the pressure be relieved by a horizontal position, the œdema disappears, or is greatly diminished. Œdema from inflammation and consequent obstruction of a vein, is seen in the legs after lying-in, in the arm after phlebitis from bleeding, and often in a single extremity in those diseases termed malignant, or of a cancerous kind, where, on examination after death, the vein will be found obliterated above the swelling, often from a deposition of matter not unlike what is found in the diseased mass, the cause of the patient's death.

"Wherever," remarks Dr. S. "great obstruction exists to the return of blood to the right side of the heart, it would be fair to conjecture from what we see in œdema in a single limb, that the whole venous circulation would be congested, and hence the whole capillary arterial system would secrete fluid, as a relief to the obstruction; and if this did not occur, the balance of the circulation would be in so disturbed a state as to cause rupture of vessels in some vital structure; and this we find to be the case: the capillary arteries pour out fluid into the cellular membrane, of greater or less quantity, according as the obstruction is considerable, and of greater or less consistence, as the patient's vital powers are greater or less, or the obstruction more or less sudden."

"Anasarca, then, is only a symptom of disease of an internal organ, with the exception hereafter to be more minutely described, in which the capillary vessels of the skin take on inflammatory action after cold rapidly applied."

Dr. Seymour proceeds next to show that in the majority of cases anasarca is dependent upon disease of the heart. The heart in these cases is enlarged, with either increase or diminution in the thickness of its parietes. In this form of anasarca, when the valves of the heart are unaffected, the pulse is increased in frequency, and occasionally in force, while the pulsations of the heart are felt over a large surface. Such is generally the case in young persons, when enlargement of the heart and adhesion of the pericardium have occurred subsequent to rheumatic inflammation. In anasarca, from enlargement of the heart, at a more advanced period of life, the valves are also frequently diseased: if the semilunar valves be principally affected, the pulse at the wrist is smaller, while the heart beats turbulently and over a large surface; if the mitral valves be diseased, there is more or less of a grating sensation communicated to the finger on applying it to the pulse at the wrist, and in either case the pulse intermits. The grating

sensation is also observed, when, with enlargement of the heart, there is a very considerable alteration of the lining membrane of the aorta above the semilunar valves, with dilatation of the artery; atheromatous deposit under the lining membrane, with portions of bone being likewise found on dissection. In both cases, but more especially the latter, the patient is subject to very severe paroxysms of pain, lasting for the space of some minutes, hours, or even days, but alternating with intervals of perfect ease.

The author states as a remarkable fact, that very extensive disease of an artery may take place without the occurrence of dropsy, while on the contrary, enlargement of the heart, unless death occur suddenly, previously to the obstruction of the return of blood to the right side being considerable, is usually attended with dropsy during some portion of its progress.

"The circumstance that the great arteries may be diseased to almost any extent, without dropsical effusion, while the heart, much enlarged, has its oppressed functions relieved by effusion, is of considerable advantage in diagnosis of diseases of this important viscus."

Although the anasarcous swelling which occasionally occurs in chlorotic females, is not strictly dependent upon organic disease of the heart, yet in such cases it will be found upon examination, the author remarks, that the languid condition of the heart's action, from want of power, gives rise to precisely the same condition, functionally, but in an inferior degree, to what arises from organic disease in the instances above referred to.

"The heart is unable to impel the blood to the extremities, and the capillary veins, neither receive nor transmit the blood with the same rapidity as in a state of health. Congestion of the venous system ensues, hence œdema of the ankles and legs, puffiness of the face, difficulty of breathing: symptoms which are removed by permanently increasing the heart's action by steel, and all the usual means of promoting the growth of the body—as exercise without fatigue, dry air, animal food, &c. The same condition arises after profuse bleedings, or hemorrhage. The obstruction of the circulation of the blood through the minuter branches of the pulmonary artery by disease, causes an inferior degree of congestion in the whole venous system. This is seen in cases of solidified lungs, either the result of inflammation, or obstruction from tubercles. The anascara in this case is not so general as in diseases of the heart, for a portion of the blood still undergoes, from the extreme minuteness of the ramification of the artery, the usual change; the alteration also has been slow, and the declining strength of the individual, from the injury of this important viscus, has enabled, in some degree, parts to accommodate themselves to the change, *i. e.* the blood is in less quantity, and the obstruction less considerable and sudden, than after enlargement of the heart itself: hence, the dropsy is less severe, being confined to some degree of œdema of the lower extremities for the general dropsy, and effusion of fluid into the chest."

Many cases of extensive disease of the lungs, unquestionably occur, however, without being attended with any degree of dropsical accumulation. In such instances, according to our author, and we believe his explanation to be perfectly correct, copious expectoration taking place affords the relief more safely to the congested circulation, than that which is effected by the effusion into the serous cavities, or the cellular membrane, in other instances. In cases of solidified

lung from tubercles, even where the secretion is not considerable, the diarrhœa or colliquative sweats, which so generally attend, relieve the obstruction.

The circumstances under which anasarca may occur, unconnected with disease of an internal organ, are 1st, when cold is suddenly applied to the surface of the body, and 2nd, subsequent to eruptive fevers.

"It is sufficient, Dr. S. observes, to remember the extreme vascularity of the cutis, the extensive secretion of perspiration over the whole extent—to judge that the impression of cold suddenly applied, checking this necessary secretion, would produce great mischief: the consequence would necessarily be, either inflammation of the vessels themselves, causing a secretion of lymph; or this process would be counteracted by an increased degree of secretion or exhalation in other parts of the body. And what in fact do we find to be the case? Most frequently, when cold is applied suddenly to the surface of the body, diarrhœa is the consequence; increased secretion and exhalation is formed in the intestinal canal, and thus the repressed sensible or insensible perspiration is balanced, and no dropsy takes place." "Ordinary fluids failing to be secreted, which it is the function of these vessels (the cutaneous) to prepare, and no increased secretion taking place from the membrane, (the mucous) the relation of whose properties with the membrane covering the body is so considerable, the vessels secrete lymph, the whole cellular membrane becomes distended, and the swelling is less elastic, more resisting, the skin more stretched and shining, than in the cases where a slow relief is afforded to the obstructed venous circulation. The action of the heart and arteries is increased in force and frequency; the secretion of urine is diminished, and high coloured; the tongue is white; in fact, a feverish condition of the body is formed; blood drawn from the arm shews the buffy coat; there is intolerable thirst present; and the remedies both indicated and effectual, are those which diminish the increased action of the heart and arteries, and control the secretion of coagulable lymph, viz. blood-letting and mercury."

Anasarca occurring after eruptive fevers is treated of in a subsequent chapter.

Chapter II. is devoted to the consideration of anasarca from rheumatic disease of the heart.

"The subjects of this disease are young, and with few exceptions under forty years of age. It has occurred to the author to see this disease in patients of nine years of age: and the most severe case he ever saw, that in which the disorganization of the heart had proceeded to the greatest extent, terminated fatally at the age of thirteen."

In this form of anasarca there is an expression of anxiety, even greater than in that from other diseases of the heart,—
"the pulse is generally small and quick, sometimes intermitting, but very small compared with the action going on within the thorax, a tumultuous beating of the whole organ: this smallness of the pulse compared with the violence of the action in the heart itself, arises from the inordinate growth of the organ, without a corresponding enlargement of the vessels of the heart." "If the anasarca be very considerable, there is little pain felt in the chest, the obstructed circulation being relieved by the pouring out of the secretion from the minuter vessels. If the effusion be only commencing, there is almost always pain in the region of the heart, often pain in the course of the biceps muscle of the left arm, and cramps in the legs: the patient is unable to lie

down, and the most easy position is bending forward over the back of a chair. There is also in the early stage a disposition to syncope. If the effusion has taken place for some weeks, the pain and disturbance in the chest are less felt, and the patient attributes all his sufferings to the dropsy. The legs are tense, the face swelled, and of a pale bluish tint, great difficulty of breathing, the urine scanty and high coloured, and where unaccompanied by disease of the kidney, does not coagulate by the usual method,—the pulse quick and weak, the surface of the body cold; there is present a short dry cough without expectoration, occasionally tinged with blood."

In such cases it will be found upon inquiry that the patient has suffered from an attack of acute rheumatism of the limbs, within a year or perhaps two years preceding the occurrence of the dropsy. Occasionally he has experienced repeated attacks, or one very severe attack has preceded the symptoms by a few months.

The pathological appearances are uniformly, enlargement of the heart—its parietes thickened, especially of the left side, with the cavities also larger than natural, but not in proportion to the increase in the thickness of their walls; the pericardium glued together by layers of lymph, often of old formation and even organized, rarely, when life is terminated by dropsy, very recent.

In anasarca following rheumatism, according to the observations of Dr. S. the other viscera are generally unaffected—the alteration in the structure of the heart being the sole cause of the disease.

The prognosis of these cases is always unfavourable,—but it is to be remarked, that the disease is often more chronic, even in its most severe forms, than dropsy from disease of the heart produced by other causes; and this arises, according to Dr. S., 1st, from the disease most frequently occurring in young persons; hence, if the severity of it be relieved in the first instance, the growth of the chest enables the impaired action to be better borne. Thus, he has seen the disease, in a most severe form, endure for five years. 2ndly, from its not being the result of excess, spirit drinking, &c. other organs have not suffered, as so frequently occurs in anasarca after such indulgences.

The treatment of anasarca from rheumatic diseases of the heart, varies according to the degree of inflammation of the pericardium going on at the time of the effusion. When the effusion has been immediately preceded by pain in the heart, and some swelling, redness or pain in the limbs, inflammatory action undoubtedly exists, and the means to relieve it must be resorted to. A moderate abstraction of blood, performed while the patient is in a horizontal posture, so as to relieve the heart without producing fainting, which when it occurs is liable to terminate in death, is the first remedy. To this should succeed the employment of calomel and opium. Three grains of the first, combined with a quarter of a grain of the latter, may be given every four hours; a blister may also be applied over the region of the heart, and a strictly low diet enjoined.

Dr. S. has found that in this form of anasarca very considerable quantities of calomel may be administered, without affecting the gums or producing any inconvenience whatever. He has repeatedly seen

from fifteen to twenty grains, in the acute stage, given during ten or fourteen days, with no other effect than to improve the breathing, diminish the swelling, procure tranquil sleep, and restore the pulse to its regularity.

Under the same circumstances in which blood-letting and calomel are indicated, the author has found the most useful diuretic in the present form of anasarca, to be nitre—he directs from ten to fifteen grains to be given in mint water twice daily. The quantity of urine, he remarks, secreted under this course, is sometimes very great, and with the most evident relief to the patient. From the preparations of colchicum, Dr. S. has found no beneficial, but rather injurious effects to result.

When the inflammatory symptoms of the case have ceased, and the patient has for months laboured under extensive effusion into the whole cellular structure, with scanty and high coloured urine, great dyspnœa, full, but easily compressible pulse; the swelling of the limbs being lax, white and receiving deep indentations from slight pressure, the object is to discharge the accumulated fluids by diuresis, and thus to relieve urgent symptoms—to this end Dr. S. recommends the preparations of digitalis, as productive of the happiest results. It is the infusion of digitalis which he has found under such circumstances to be the most uniformly successful. He recommends it to be given in the following formula: ℞ *infusi digitalis* ʒiv. *liquor. oxymur. hydrarg.* ʒij. *aq. menth. sativ.* ʒviij. *tinc. cantharidis* ♏xxx. m. To be given twice or thrice in the course of the day. The tincture of cantharides, although an active diuretic, rendering, according to our author, every other more effectual, is, however, contraindicated in aged persons, where disease of the urinary organs is present.

The activity of the above diuretic draught, Dr. S. remarks, is sometimes astonishing; he has known as much as a gallon and a half of urine voided in one night, after the second day of its employment. It will occasionally, however, purge, an effect to be prevented by giving a pill composed of one grain of opium every night at bed time.

"It is obvious that the enlargement of the heart continues, when the dropsy which relieved the obstructed circulation is carried off by remedies, and that the patient has a crippled existence,—but in the more opulent classes of society, his life may be spared many years: not so with the poor man, he must return to the rapid changes of temperature—the originally exciting cause of the diease—and to all those circumstances which especially influence the diseased organ, viz. toil, anxiety, vexation, and want. Hence the numerous and unhappy relapses which are seen in hospital practice."

Anasarca may occur from enlargement of the heart produced by the intemperate use of ardent spirits or malt liquors, or by long continued anxiety and great mental distress. "In the first instance, the heart is much enlarged, principally with increased thickness of the parietes of the left ventricle, and the septum between the ventricles, it occurs from twenty to sixty years of age."

The distension of the cellular membrane is in these cases enormous—in some instances causing the cutis to split into laminæ, giving

the appearance of fine threads, dividing its texture transversely; in others, effusion occurs in large blisters on the extremities, which by bursting and discharging serum, for a time alleviates the distress.

"The pulse is generally strong and quick, the urine scanty and high coloured, and does not coagulate by heat, or the admixture of acid,—the tongue is furred, the patient obliged to be raised in bed, and complaining of an insupportable oppression. The face is swollen, and often with a bluish tint, and there is constant thirst; the bowels are generally natural in their functions, and the appetite little deranged."

In such cases the most obvious means of relief would appear to be by scarifications or incisions through the skin, which are in fact for the time very effectual. Dr. S. has seen the dropsical swelling entirely reduced by this means in a few days; but in almost every *hospital* case, erysipelas first, and subsequently gangrene, supervened, and the patient died. Acupuncturation in dependant parts produces an inferior degree of relief,—but, according to our author, with less danger, at least in hospital practice. He has, however, known this operation to be followed by erysipelas and gangrene, although far less frequently than incisions through the skin.

The most important of the internal remedies in the form of dropsy under consideration, agreeably to the experience of the author, is elaterium. It may be employed where the strength is yet unbroken, however great may be the oppression from the extent of the effusion, and the relief has often been so great and so permanent as to induce the belief, that not only has the effused fluid been expelled, but that the increased bulk of the parietes of the heart has been diminished. To the elaterium, blood-letting should be premised, as well to unload the congested venous system as to promote absorption. The elaterium may be given in the following formula: ℞ *elaterii* gr. ½, *subm. hydr. pulv. capsici*, āā gr. ij. *conf. ros. canin.* q. s. ut ft. pil. To be taken in the morning. This will very frequently produce many liquid stools, accompanied for the most part by severe bilious vomiting, by which absorption is increased. Oppression in this disease should not be confounded with actual debility.

When the elaterium fails, or ceases to produce the desired effect, Dr. S. has succeeded in evacuating the fluid by large doses of cream of tartar. He directs an ounce in solution to be taken every morning; or if this act too violently by stool, half an ounce. Its beneficial effects generally commence after the fourth day.

Anasarca from enlargement of the heart, with attenuated parietes, (chap. 3) occurs in constitutions broken down by habitual intemperance, or debilitated by affliction, long continued anxiety, great watching, and sometimes after long continued and profuse evacuations—more frequently in females than in males, and it is more commonly met with in advanced age than the other forms of anasarca from disease of the heart.

The pulse is weak, often irregular; even where there is volume it is very compressible. The face is swelled and of a white appearance, while the integuments pit on the slightest pressure. The effusion is

always preceded by difficulty of breathing, especially on any quick motion; by violent palpitation, and disposition to syncope. The difficulty of breathing is not, as in the former instance, at first much relieved by the effusion, for not unfrequently the cellular membrane connecting the lobules of the lungs is infiltrated also. It is in this form of dropsy that sudden death frequently occurs, even when apparently the disease is diminishing. It is also frequently complicated with dilatation of the arch of the aorta, and deposition of atheromatous matter with spicula of bone under the lining membrane. In such cases, besides the evils arising from the oppression and distension present, there are also paroxysms of severe pain similar to what occurs in angina pectoris.

It is in this form of the disease, where the tone of the system is much impaired, according to our author, that the preparations of digitalis as diuretics are most effectual. The digitalis may be combined with mercury, (pil. hyd. gr. iij.; scillæ exsicc., pulv. fol. digitalis āā gr. j.) or given in infusion with the liq. oxymur. hyd. in mint water; and if the patient labour under no disease of the bladder or urethra, with the tincture of cantharides, by which latter its diuretic powers will be greatly increased.

"The nitrate of potass in solution, in the dose of fifteen grains; the acet. potass. in the dose of from one to two drachms, either in its usual form, or made by neutralizing in solution the carbonate of potass with the vinegar of squills* may be given in a draught, with a pill consisting of three grains of the blue pill, several times in the day; or a kind of punch may be given, made with cream of tartar instead of lemons, to every pint of which two ounces of gin may be added: all these are very effectual diuretic drinks. The latter is very convenient in hospital practice.

"The spirit of nitric ether may be added, in the dose of a drachm to a draught containing ten grains of nitre dissolved in mint water; or it may be given as a beverage in the proportion of two drachms, or two drachms and a half of ether in six ounces of water: in this latter form it is not disagreeable."

From the observation of several years Dr. S. considers that, in the form of dropsy under consideration, the most effectual diuretics stand in the following order of utility:—Infusion of digitalis with tinct. cantharid.; nitrate of potass; supertart. potassæ with sp. juniper comp.; pill hydrarg., pulv. dig., et scillæ exsicc. in form of pill; acet. et tinct. scillæ; infus. pyrolæ umbellatæ, an ounce of the leaves and stalks to a pint of water, which should be drunk during the day. The latter is, however, improper in cases of advanced age, or where the patient has suffered from stricture. Decoc. spartii, an ounce of the broom tops to a pint and a half of water boiled to a pint, and mixed with an equal quantity of hot milk, or in infusion as common tea, it is most useful in the convalescent stage—sp. ætheris nitrici; sp. armoraciæ comp.

If the dropsy be of recent date, the above means, we are told, will often suffice to carry off the water by diuresis, while careful attention to diet, which should be nutritious but not stimulating, carriage exer-

* The following was a favourite prescription of the late Sir F. Milman:—℞. aq. menth. virid. ℥j. aq. puræ ℥ss.; carb. potass gr. xv.; aceti distill. ℥vj. aq. pip. Jamaic.; syrup. aceti scillæ, āā ℥j., mix for a dose.

cise, pure air, and the avoidance as much as possible of harassing and anxious occupations, will sometimes prolong for years the patient's life. But where the dropsy has been of several months continuance, little is to be expected except relief. Even here, however, life may be prolonged for a considerable time, under the most unfavourable circumstances, in the opulent.

It sometimes happens, while the dropsy has for a long time resisted the remedies employed, that after the administration of some trifling remedy, the swelling begins to subside with great rapidity, and the patient feels delighted at this apparently favourable circumstance. This rapid subsidence of the anasarca, Dr. S. considers, when not preceded by a gradually increased flow of urine or other evacuations, as a very fatal symptom. "The vital powers are no longer sufficiently strong to afford relief to the obstructed circulation; secretion from the smaller and more minute vessels no longer relieves the labouring heart." In several cases which have fallen under the author's notice, the patient has never rallied, after such sudden subsidence of the effusion, beyond a month, though he has heard of life being prolonged somewhat longer.

Anasarca, from the sudden impression of cold, (chap. 4,) according to Dr. S., is not of very frequent occurrence. When it does take place, the intumescence of the surface is hard and tense, the pulse hard, the urine very scanty and incoagulable by heat or acids, the heart presents no indications of organic disease, though its action is increased; the bowels are costive. There is a general febrile excitement; the vessels of the skin over the whole surface of the body secrete serum, and the mucous membrane is deprived of the natural secretions furnished by its vessels in a state of health.

The indications of cure are to diminish increased action and to restore the secretions, especially those of the intestinal mucous membrane.

The patient should be immediately bled, and the bleeding is to be followed by a pill, night and morning, composed of three grains of calomel and one of opium, with a saline draught three or four times in the day; every second morning the bowels should be freely opened with senna and crystals of tartar. The cure will generally be perfect in about ten days; but the patient should be confined to the house for a few days longer.

The pathology of anasarca succeeding to scarlet fever is, Dr. S. remarks, not well understood; he is convinced, however, that it is seldom fatal, and is of far less frequent occurrence than formerly. The French and Italian physicians attribute the production of the dropsy in such cases to the impression of cold upon the surface.

"The cold practice in this disease," observes our author, "universally pursued in Britain, and which is rarely followed by anasarca, is the best answer to such an explanation. The same may be said of the opinions which attribute this form of disease exclusively to weakness."

Dr. S. remarks that nearly all eruptive diseases, when mild and little interfered with by remedies, are followed by diarrhœa; this

being the means by which nature terminates the cure; and hence when saline purgatives are freely used throughout the disease, anasarca seldom supervenes. It is mentioned as a remarkable fact that the occurrence of dropsy after scarlatina is by no means in proportion to the severity of the attack. A very slight febrile attack is sometimes followed by it; and the author does not recollect among the "very worst cases of a low type to have ever seen one terminate in serous effusion."

"Anasarca, after scarlatina, begins generally from the fourteenth to the eighteenth day after the commencement of the disease—sometimes gradually, sometimes within the space of a very few hours."—"In many instances the urine is mixed with blood, and in such cases coagulates."

In regard to the treatment, the author directs, "If the preceding fever has been slight, and the forces of the patient little broken, and especially if it has been thought unnecessary to purge in the disease, and no diarrhœa has supervened," that blood-letting should not be omitted, and that the patient be freely purged with calomel, followed by senna with crystals of tartar, or a tea-spoonful of an electuary composed of two drachms of jalap, half an ounce of cream of tartar, and half an ounce of honey, to be repeated every alternate day, a beverage of half an ounce of sp. ætheris nitrici in half a pint or a pint of water, with a small proportion of syrup, being administered during the day.

If the patient be weakly, or his forces are much broken by previous delicate health, and a severe attack of illness, the author directs that recourse be had to diuretics—either the combination of digitalis with a bitter, or some of the bitter diuretic infusions. He has seen the best effects result from a combination infus. digital. and infus. gentianæ, of each three ounces, with one drachm liquor potassæ; and in a few cases striking benefit has resulted from the infusion of pyrola umbellata, to every pint of which half a drachm of tinct. lyttæ has been added, in the dose of two ounces every four hours. Dr. S. has never known benefit to result from the use of tonics alone. He conceives that, in many cases, the vapour bath will be a valuable adjunct in promoting the cure, by inducing a more healthy action of the skin; the use of the lancet should, however, always be premised.

"In chlorotic anasarca and in anasarca occurring after great loss of blood, a functional condition of the heart occurs not very dissimilar to what happens when the viscus is itself diseased in its structure."

"In chlorosis there is a deficiency of red blood,—the heart makes up in frequency, in very severe cases, what it wants in force, (the same occurs after great loss of blood—hence what is called the hemorrhagic pulse,) and the blood again shews a disposition to stagnate in the right side of the heart; the ankles and legs swell, the face is puffy and white; in slight cases the pulse is languid, in severe ones, rapid and very weak; there is terrible palpitation on ascending a stair; the pulsation is communicated to the jugular veins, and there is much headache: but the treatment is widely different from that necessary in a case of organic disease; the patient's strength in this instance must be built up, the injured organ is not to be relieved from its oppression by evacuants, but stimulated gradually to circulate the blood more regularly, while nutrition affords this fluid of its natural and stimulating quality."

The preparations of steel, where they can be administered without exciting fever, are the best remedies in these cases.

"The ammoniated tincture, given in the dose of half a drachm to one drachm several times in the day, will be generally borne; when, however, it produces much headache, the cure should be commenced by ammonia, æther, or the fœtid gums; after a short time steel will be borne, and in another week, the most effectual, in the author's experience, of all the preparations of steel, the mist. ferri comp. will be taken in the dose of an ounce, gradually increased to two ounces, twice in the day, with the most decided benefit. To this must be added, if possible, horseback exercise, and pure dry air; first the lightest, and then the most nutritious animal food should be administered."

By these means an effectual cure may be accomplished.

Chapter V. Anasarca from disease of the kidneys.

"That the kidneys are frequently diseased, as a cause of dropsy, is a modern discovery, which we owe to the patient investigation and sagacity of Dr. Richard Bright; and subsequent authorities have confirmed the fact, that the disease of these organs is always accompanied by a greater or less degree of coagulability of the urine, according as a greater or less degree of alteration of the structure of the kidneys exists—from perfect granulation, as pointed out by Dr. Bright, to simple engorgement.

"The specific gravity of the urine is also always less than in healthy urine, and there is often found a deficiency of urea in it."

"The urine in this disease is sometimes scanty and high coloured; but in the worst cases the urine has been found to be pale and abundant, while the anasarca was general and to a great extent. In such cases the disease is very fatal; and the condition of the kidney, its extensive disorganization and obstruction visible after death, explains the reason why anasarca without any diminution of the secretion of the urine, was always looked upon as a condition of disease unusually hopeless."

The coagulability of the urine after scarlatina, with admixture of blood, was noticed by Drs. Wells and Blackall. It may occur in dropsies from cold, in which an inflammatory state of the system exists, and is then relieved by the ordinary antiphlogistic remedies.

Dr. Bright would appear, in cases in which disease of the liver, heart and kidneys co-exist, to consider the disease of the kidneys to be the primary affection, and that of the two other organs merely secondary. Dr. S. however, believes that the disease of all the above organs are to be referred to the same cause, the abuse of ardent spirits, or long continued and repeated exposure to cold.

"When a patient presents himself for examination with anasarca of the legs, thighs, and parietes of the abdomen, of some weeks duration, where no disturbance in the motion or regularity of the heart's action is to be perceived, and on testing the urine by heat, or the addition of a mineral acid, it coagulates strongly, we may safely conclude that disease of the kidneys is the organic cause of the dropsy; if the urine be scanty and high coloured, it is a relievable case; if abundant and pale coloured, one of deep anxiety. The skin is singularly pale and dry in this disease: and Dr. Bright has very fully exemplified the fact, that persons labouring under it are subject to sudden inflammatory attacks of various viscera, and even of effusion into the ventricles of the brain. The principal indications of cure, then, are to get rid of the dropsy by such remedies as will alter the morbid condition of the urine; and secondly, to remove any inflammatory attack which may arise in the course of the treatment.

Dr. Bright, and subsequently Dr. Osborne, have laid great stress on the sympathy which exists between the skin and kidneys, and recommend every attention to restore the healthy secretion of this organ."

Dr. Wells cured three cases out of five, of anasarca with coagulable urine, with cantharides.—Dr. Bright states that he has succeeded with the cream of tartar in several instances, and Dr. S. states that he has found the latter far more useful than any other article in the form of dropsy under consideration. He has employed at the same time the vapour bath, on alternate days. The perspiration excited by the bath is excessive, and its use should be graduated to the patient's strength. When there is pain in the lumbar region, as not unfrequently occurs in an aggravated form of the disease, cupping is very useful, and every intercurrent inflammatory disease Dr. S. has been in the habit of treating exactly as if no dropsy had existed, according to its symptoms and locality—blisters only being excepted, from their being often followed by erysipelas, and even sloughing.

The second part of the treatise is devoted to the consideration of ascites or dropsy of the abdomen.

Dr. S. is of opinion that when the kidneys alone are diseased, ascites does not generally occur; but that any apparently increased bulk of the abdomen arises from anasarca of the cellular membrane of the integuments.

Ascites is occasionally produced when the heart alone is diseased, but from the small extent of the effusion within the peritoneal sac which then takes place, it is subordinate in importance to that into the cellular membrane of the surface of the body. In consequence of the peculiarity of the abdominal circulation, the obstruction to the heart's action from disease of that organ will effect the venous system of the abdomen far less than it does the venous circulation in the other parts of the body.

Dr. S. sets down disease of the liver as the principal cause of abdominal dropsy. He considers, however, that mechanical pressure upon the vena portæ from enlargement of the liver to be very rarely the cause of effusion into the peritoneal cavity, "and then only when the viscus is not simply enlarged, but indurated." The liver, in consequence of "depositions of matter of a malignant nature, known under the name of encephaloid tubercles," is often so much enlarged as to occupy the whole abdomen, without any effusion being present.

"The disease of the liver most frequently connected with ascites, is according to Dr. S., one characterized by diminution of the bulk of the viscus. The liver is about one half its natural size, very hard, and with the sharp edge blunt and rounded. After death, instead of finding it protruding into the belly, we seek for it under the ribs in the right hypochondrium, and find it there drawn up, as it would seem, from its diminished size. The peritoneal coat is, in such cases, most frequently found thickened: this not unusually takes place in parts, and this partial thickening gives to the viscus the appearance of being puckered, not very unlike the lobulated structure of the calf's kidney"—"Occasionally, the whole peritoneal coat is thickened, of a milky white colour, and the viscus beneath contracted, extremely hard to the knife, and presenting a round almost globular mass, when removed from the body.

"The consequence of this change is, the *uniform pressure upon and obstruction*

of the minute and secreting branches of the vena portæ: such an obstruction naturally throws back the blood upon the trunk of the vein; the capillary veins are congested, and the capillary arteries secrete fluid—not a transudation from their coats, as was conceived, but a secretion resembling the serum of the blood.

"This thickening of the peritoneal coat has made some authors suppose that inflammation of this covering alone is sufficient to produce the disease, and that it is never found where such marks of inflammatory action are absent, hence that dropsy is necessarily the result of inflammation."

The above supposition the author considers to be unfounded, because, as he asserts, peritoneal inflammation may exist to a great extent without dropsical effusion, and because there is another diseased condition of the liver in which, although the peritoneal coat is not implicated, dropsy is the consequence, from *uniform obstruction* being presented to the extreme branches of the vena portæ."

"In this instance, the secreting structure of the liver is nearly obstructed by the deposition of a reddish white substance, by some supposed to be lymph, and the effect of inflammation, by others supposed to be cholesterine.—On a section of the liver, the whole seems to be made up of rounded masses, which, in some instances, can be separated from the cellular membrane which connects them, but the change is uniform throughout the whole mass. In many such cases the peritoneal coat is quite clear and transparent, proving that causes exist, independent of its thickening, to produce such an obstruction to the progress of the blood, as to act as the proximate cause of dropsy."

In answer to the objection that obstruction alone cannot be the cause of the effusion, because cases occur in which the structure of the liver is wholly obliterated, the secreting parenchyma being changed into a fatty mass, or of a very pale yellow colour, or almost entirely composed of encephaloid tubercles, and yet without dropsy being produced, Dr. S. presumes that, in such instances, there is an alteration in the circulating fluid itself; the arteries do not secrete fluid, in order to keep up the balance of the circulation, impeded by the disease of the viscus, but both solids and fluids undergo a degree of degeneration, and the whole system tends to decay: The countenances of patients thus diseased is of a waxy, yellow colour; no red blood appears circulating on the surface; the principal ailment complained of is excessive weakness and sinking, often without any local pain; the pulse is weak and about a hundred in a minute; the patient is emaciated, and the muscles have lost their firmness and colour,—in blood drawn from the arm, the red particles are scanty, and the fibrin scarcely adheres; there is a weakened state of the nutritive fluid, adapted to the weakened state of parts which act in the function of secretion, both of which tend to produce with certainty the death of the patient.

Of the two diseased states of the liver described above as causes of ascites, the first is the most frequent, we are informed, and is undoubtedly produced by intemperance, especially in the use of ardent spirits. The second, Dr. S. is inclined to believe often arises from indulgence in the use of opium.

"When some induration of the liver accompanies disease of the heart, both ascites and anasarca are present, but the abdominal effusion is small in quantity, compared with what takes place in the cases now to be considered. In the former, the increase of bulk is principally owing to infiltration of the cellu-

lar membrane connecting the muscles of the abdomen; in the latter, these muscles are wasted, the fat absorbed, the distended abdomen is tense in every part, the swollen veins give to the whole a bluish appearance, while the hands and arms are wasted, the features drawn in and haggard,—the legs are also often wasted, and indeed always so, early in the disease, but at length the pressure of the immense body of fluid in the pelvis prevents the return of blood in the iliac veins, and the lower extremities become anasarcous. The pulse is quick and feeble,—the tongue red, and rough, with prominent papillæ, and sometimes aphthous; the urine is very scanty, and deposits a pink sediment, like the finest rouge; the thirst is insupportable; and the alvine excretions scanty and ill coloured, the bowels being sometimes difficult to move, at others affected with diarrhœa."

To effect a cure in such cases is impossible—when the effusion is recent, the author states, that advantage is occasionally derived from mercurial friction upon the abdomen; three grains of calomel with six of rhubarb, being given internally every alternate night, followed by infusion of senna with crystals of tartar, in the morning.

In regard to the dandelion, the operation of which has been so much praised in the cases before us, Dr. S. states that although he has seen the article freely administered in extract, decoction and infusion, he has never been able to trace any obvious effect from its use beyond slight diuresis, or occasionally, when in large quantities, relaxation of the bowels. In the form of the disease under consideration the debility of the patient precludes the use of elaterium. His chief comfort, according to Dr. S., is derived from the use of diuretic drinks, especially nitre in solution, which relieves the craving thirst more than any other remedy. For the action of other diuretic remedies he refers to what has been said under the head of anasarca. When the disease is very far advanced, Dr. S. has, in one or two instances, seen two grains sulphate of quinia dissolved in two ounces of water, with a few drops of diluted sulphuric acid and a drachm of the tinct. cardamomi, given on the days in which the calomel and rhubarb are omitted, to work apparently wonders for a few weeks, and to impart not only hope to the patient, but absolute relief by sustaining his strength. The preparations of iron may occasionally be used with success. The muriated tincture acts also, in such cases, sometimes as a powerful diuretic; ten drops may be given thrice daily in infus. quassiæ.

Tapping as a means of relieving the distension of the abdomen will naturally suggest itself to the mind of every practitioner. Dr. S. although he prefers an early resort to this operation is not inclined to advise its adoption until purges, with neutral salts, and mercurial frictions, have been tried. He very properly remarks, "it is not unaccompanied with danger from peritoneal inflammation; and, as it is well known, the necessity for having recourse to it speedily recurs."

"When the liver has been contracted during a long period, has a puckered peritoneal coat, or that membrane is thickened like semi-transparent horn, its sharp edge having entirely disappeared, or where the secreting vessels are uniformly obstructed, the fluid drawn off (by tapping) is quite limpid, and enormous in quantity.

"If clear serum, deeply tinged with blood, follow the introduction of the

trochar, we may be certain that a malignant growth of considerable size, often attached to the liver or ovarium, is the cause of the peritoneal dropsy."

When the fluid drawn off is of the colour and consistence of whey, with shreds of lymph floating in it, it is, according to the author, undoubtedly the product of inflammatory action, modified by the strumous habit of the patients in which it principally occurs. In other cases of ascites, he remarks, "inflammation may have been, and probably has been, the cause of the thickening and hardening and contraction of the liver, but the effusion is a consequence of this alteration of structure already produced:" and in cases of serum effused from the pressure of malignant tumours, these latter are, he believes, traced by no one to true inflammatory action at their commencement, or during any part of their growth.

The sudden disappearance of ascites from disease of the liver is generally an occurrence of very dangerous import. This is preceded, remarks our author, often by frequent and almost uncontrollable vomiting; or, if the water has been drawn off by tapping, and does not again collect, violent pains in the bowels occur, with a diarrhœa, which is not to be restrained by any of the usual remedies. After death, Dr. S. has found the intestines to be of a deep leaden blue colour, throughout their whole extent, and the omentum of the same colour—the peritoneal coat of the intestines being thickened and opaque. Sometimes shreds of lymph, of no very recent formation, adhere to the convolutions, but in general the whole peritoneal covering of the intestines is only thickened equally throughout, and of this blue colour. Dr. S. has known the pain and diarrhœa immediately to succeed the disappearance of the fluid and last during several weeks, its severity being little mitigated by remedies.

While Dr. S. points out especially the dependence of ascites upon contracted and hardened liver, he desires not to be understood as overlooking the effusion of fluid into the abdominal cavity which succeeds to enlarged and *hardened* liver and spleen. This is frequent after repeated attacks of ague.

Fortunately, he remarks, except under very aggravated circumstances, the effusion and its cause are capable of being removed, and the patient permanently cured, unless constantly exposed to the influence of miasmata. The remedies, he recommends, are mercurial friction, saline purgatives, douches of cold water and the hydriodate of potass.

"Two or three grains of this latter, taken, dissolved in two or three ounces of water, twice daily, will sometimes succeed when other remedies fail: under its use the patient's strength and appetite will return, while the dropsical effusion sometimes subsides gradually, with an increased and limpid flow of urine; of course if the enlarged viscera be painful to the touch, it will be advisable to apply leeches repeatedly, before having recourse either to mercurial frictions or the use of the hydriodate of potass. Where saline mineral water cannot be obtained, the best medicines are the tartrate or supertartrate of potass, or the Rochelle salt, in the dose of from half an ounce to six drachms, every morning, dissolved in half a pint of water."

In the sixth and last chapter the author treats of ascites from tuber-

culated accretion of the peritoneum, of which latter he presents the following description.

"The disease, where it proves fatal early, consists of a pearly thickening of the peritoneum, the membrane being pushed up by numerous eminences, or tubercles, deposited on the cellular side of the serous membrane: in mere chronic cases, large masses of thick cheesy looking matter are deposited on the cellular side of the omentum, sometimes distending it, like a bag, into an unequal globular tumour, at others into a flat mass, compressing the intestines like a pad." The disease is often accompanied with vomiting of a peculiar character; being of a deep leek green colour, sometimes varying to purple; where this vomiting occurs, the disease of the peritoneum is, according to Dr. S., invariably present; it has, however, been absent in all the instances which have fallen under his notice accompanied with ascites.

"The dropsy which accompanies this disease is always more scanty than that which is the consequence of disease of the liver, sometimes only a few pints, and seldom more than two gallons are poured out."

"It is more common in young people than in old, and in females than in males. The dropsical effusion is often mixed with shreds of lymph, and is more or less whey-coloured, from the presence, doubtless, of low inflammatory action, and it more frequently accompanies the universal thickening of the peritoneal covering of the bowels, than where accretion of the omentum forms the mass of disease: after death the small intestines are glued together, and more than once Dr. S. has seen the whole taken out together, after death, in one globular mass, by passing a ligature round the root of the mesentery.

"The pulse in such cases is weak and quick, the features pinched and sharp, and the tongue red and glazed, as if a hot iron had touched it; sometimes of still deeper red colour, with patches of apthæ. There is always a sense of weight and distension of the abdomen, even where no ascites is present."

In the treatment of this affection, Dr. S. conceives that the internal use of mercury is rarely of benefit, nor is any really good effect, he states, derived from powerful purgatives, these being apt to produce vomiting, which is much to be dreaded. He has observed where effusion takes place, that it is often early in the disease; whereas, when the disease is fully established, and the prolongation of the serous membranes are formed into hard masses, it is more frequently absent, while the peculiar and fatal vomiting relieves the obstructed circulation.

Tapping has invariably, observes our author, been followed by bad results, increasing the low inflammatory action, and tending thus, perhaps, to exasperate the disease.

If pressure upon the abdomen causes severe pain, Dr. S. directs a bleeding from the arm, or if the patient be weakly, a dozen leeches to the abdomen: further than this, the antiphlogistic practice appears to him to be hurtful, and in many cases, he adds, the practitioner is not consulted until the results of slow inflammation have been established, thus rendering depletion improper, by its weakening the forces of the patient without controlling the action which first produced the disease.

"Frictions with the liniment. hydrarg., morning and evening, are often attended with benefit, but it is on the use of the hydriodate of potass Dr. S. has been accustomed to rely, from finding the general health recover under its influence, and the effusion, hardness and tightness of the abdomen disappear in a remarkable manner. Two grains of this salt, given in a draught of equal parts of cinnamon and common water, with a little syrup, may be administered for several

weeks twice in the day." "During its employment a few leeches may occasionally be applied with advantage where there is any pain upon pressure; if restlessness and sleeplessness be present, five grains of the extr. conii may be given with each draught, in the form of pill. The bowels are generally costive, and Dr. S. has found the best medicine to relieve this to be half an ounce to six drachms of phosphat. sodæ daily in a pint of beef tea.

Very solid tumours of the ovary, or enlargement of that organ, with much of the structure in the cysts solid, will often, from pushing upwards the intestines, compress veins of the vena portæ, and produce ascites. In such cases, the author remarks, the recumbent posture and diuretic remedies will often relieve the ascites in a remarkable degree, and after a time the tumour often shifts its place, and the local pressure is removed.

Dr. S. denies, so far as his observations extend, that dropsy is ever produced by rupture of the lymphatics or thoracic duct, or by simple obstructions of glands causing pressure upon the lymphatic vessels.

Ascites does not succeed eruptive diseases as frequently as anasarca. Dr. S. has never seen it alone. He has heard of one case which was entirely cured by the use of the infus. pyrolæ umbellatæ, and continental writers speak highly of spartium scoparium, and an infusion of the root of the ononis spinosa; when it occurs early, it is probable, he adds, that its progress would be best stopped by antiphlogistic remedies and saline purgatives.

As an appendix to his own observations, Dr. S. has presented a translation from the Italian of Gromini's well known work on the causes and cure of dropsy, in which it is attempted to be proved, and by arguments of an extremely plausible character, that dropsy in every instance is dependent upon inflammation. D. F. C.

ART. XII. *A Treatise on Tetanus, being the Essay for which the Jacksonian Prize for the year* 1834, *was awarded by the Royal College of Surgeons in London.* By THOMAS BLIZARD CURLING, Assistant Surgeon to the London Hospital and Lecturer on Morbid Anatomy. 8vo. pp. 236, London, 1836.

The treatise of Mr. Curling is valuable, not because the author has actually succeeded in throwing any new light upon the subject of which he treats, but from its containing a very full and able digest of all the known facts in relation to a disease, of the true pathology and proper management of which the views of physicians have heretofore been extremely vague and confused. Every important and well authenticated fact connected with the disease contained in the medical writings of a recent date, the author appears to have collected with great industry, and he has arranged the materials thus obtained, in such a manner as to present one of the best histories extant of the causes, nature and treatment of tetanus.

We would not wish to be understood as subscribing to the entire correctness of all the inferences which Mr. C. has deduced from the facts which he details,—we are persuaded, however, that his views generally considered, will be found to accord with the result of future observations.

As an evidence of the high opinion we entertain of the work before us, we shall present to our readers a complete analysis of its contents.

Passing over the two first sections which merely relate to the definition and leading forms and varieties of tetanus, we are presented in the third section with the following graphic sketch of its leading symptoms:

"At the commencement of an attack of tetanus, the patient generally complains of stiffness or uneasiness about the muscles of the jaws, throat, or neck, which is frequently attributed by him to having caught cold, and described as a sore throat or a stiff neck. A difficulty is experienced next in rotating or moving the head, and in masticating and swallowing food, attempts to expand the jaws occasioning considerable distress, the nature of the disease often being first detected on requesting the patient to show his tongue. A painful traction or sense of tightness is soon felt about the cartilago ensiformis, passing backwards to the spine, and the muscles along the back and those of the abdomen become affected with spasms, which may afterwards extend to the limbs. The patient is bathed in a profuse perspiration, and suffers greatly from thirst, but the attempt to swallow often causes such a distressing paroxysm that there is complete inability to drink or to take any nourishment. The larynx becomes raised, the angles of the mouth drawn up, the alæ of the nose elevated, the nostrils expanded, the eyes fixed and prominent, the brows contracted, and the forehead wrinkled, giving to the countenance an expression of great distress and anxiety, and frequently a peculiar grin, called by the earlier writers *risus sardonicus.* The voice is sometimes altered, being harsh and disagreeable, and, in the violent paroxysms, the tongue, being forced between the teeth, frequently becomes severely lacerated and torn, rendering the mouth bloody, and adding very much to the frightful appearance of the countenance. The shoulders are drawn forwards, and the body, forced into different postures, according as one set of muscles is more strongly contracted than their antagonists, is sometimes, during the paroxysms, so violently thrown about as only to be protected from injury by the care of assistants. The pain at the præcordium increases, respiration is embarrassed and hurried, and the pulse becomes quick and irregular. As the disease advances, the highly painful and distressing paroxysms recur more frequently, being renewed every ten or fifteen minutes. They also become more violent and painful, and are induced by the most trivial circumstance, as opening the door, a draught of air, or the least attempt to move or swallow. An agonizing sense of suffocation is experienced, the face appears livid, and, in a state of violent convulsion, life frequently terminates suddenly; or sometimes all the symptoms are abated just previous to death, and the patient afterwards sinks as if all the powers of the system were exhausted by the long and violent contractions of the muscles, and by the excess of pain and suffering.

"This must be received rather as an enumeration of the order in which the different symptoms, when present, generally appear, than as an accurate representation or exact account of the usual progress of the disease. For there is every possible variety and irregularity in the symptoms, both in different cases and at various periods of the same case."—pp. 5–7.

The expression of the countenance in tetanus is not invariably the

same in every case. Aretæus observes, that the distortion of the face is so great that patients are not recognised by their most intimate friends. A case is related by Dr. Farr, in which the spasms of the muscles of the face had so deeply impressed the marks of age on the countenance of the patient, who was only 26 years of age, as to induce all who saw him to believe that he was at least sixty. The author once observed the same circumstance in an equally remarkable degree. In one case the mouth was kept firmly closed by the action of the orbicularis oris.

The pain experienced in tetanus generally varies according to the violence of the spasms. The spasms are particularly painful when occurring in muscles implicated in the wound, especially if in a state of inflammation. The continued spasm, or rigidity of the muscles, is often, however, unattended with pain, so that it is only during the paroxysms that any sense of uneasiness is experienced. Some remarkable instances have been described, in which there was complete immunity from suffering during the most acute paroxysms; and Sir Gilbert Blane refers to an extraordinary case, which proved fatal, in which the sensations excited by the violent muscular contractions was a sort of tingling of a pleasurable nature. Pain at the præcordium is rarely absent in acute tetanus. Some writers have supposed it to be invariably a fatal symptom, but many cases have occurred, in which, although this symptom was severe, the patients recovered. The cause of this pain the author considers to be correctly referred to spasm of the diaphragm. When very severe there is usually very considerable opisthotonos, which appears to be partly owing to the instinctive efforts of the patient, in order to relieve the painful traction at the præcordium. It is frequently one of the earliest symptoms, but sometimes occurs only at the termination of the disease. Respiration is laborious and hurried, being sometimes accompanied with a kind of catching of the breath.

"Inability to swallow arises from spasmodic action of the muscles of the tongue and soft palate, and probably from contraction of the cardiac aperture of the diaphragm. In the attempt at deglutition, fluids are often rejected with force through the nose and from the mouth, and such distressing paroxysms are induced by the spasms excited in the muscles of the larynx, that there is sometimes a horror even at the sight of fluids. The same circumstance constitutes an effectual bar to the introduction of a flexible tube down the œsophagus from one of the nostrils."—p. 9.

The muscles of the eye are sometimes, but not generally, affected. The pupils the author has generally found contracted. The muscles of the extremities are less frequently the seat of spasm than those of the neck and trunk, and the wrists and hands are very seldom affected. The spasms sometimes commence in the limb which has been injured. In a case related by Dupuytren the muscles of the injured limb were permanently and painfully contracted, when no other part of the body was affected. In one case Mr. E. observed the spasms to be more severe in the injured limb than in the sound one.

By Parry, Currie, Travers, and Howship, it is believed, that in

fatal cases the heart itself becomes finally affected with spasms, and from this the death of the patient results. This opinion our author considers exceedingly problematical. That spasm of the heart can be an ordinary symptom of the disease is, he declares, certainly impossible; for it must be obvious, that if such were the case, the action of the heart, instead of being accelerated, which is universally admitted to be its condition in tetanus, must be greatly retarded, or even altogether arrested, so long as the spasm lasts. Without venturing to deny that the heart ever becomes affected with spasm, he considers that there is no evidence proving such to be the fact, or even rendering it probable, and that it is little better than a gratuitous assumption to account in this way for the somewhat sudden manner in which the disease frequently terminates. In all the cases of tetanus witnessed by our author, the action of the heart, as well as of the respiratory movements, has been in some degree accelerated, and during the paroxysms there has generally been a further increase of about ten or twelve pulsations in the minute, whilst towards the close of the disease the pulse has been feeble, irregular, and sometimes intermittent. In one case it was as much as one hundred and eighty during the paroxysms. He conceives that the frequency of the pulse, and the hurried respiration must be, in a great degree, ascribed to the forcible contractions to which the muscles are excited, especially during the paroxysms. The danger of the disease is not, however, exactly proportionate to the intensity of the spasms, but is influenced by the particular class of muscles affected. Mr. C. likewise remarks, that many of the remedies usually exhibited in large doses may exert considerable influence in increasing the heart's action, so that the condition of the pulse must be regarded as a very fallacious test of the severity or acuteness of the disease, and cannot therefore be depended upon as a guide in forming an accurate prognosis. The supposition that the middle coat of the arteries may in this disease become affected with spasm, Dr. C. rejects as altogether unfounded.

The obstinate costiveness which sometimes exists both previous to and during the disease, and which has led some pathologists to suppose, that the muscular structure of the intestinal canal also becomes affected with spasm, the author accounts for from the excessive cutaneous transpiration generally attending the disease, causing a more active absorption of the watery particles from and a diminution of the secretions poured into the alimentary canal; hence the fæces being deprived of their proportion of the excrementitious fluids, become indurated and reduced in bulk. The combined pressure also of the diaphragm and abdominal muscles, when these are permanently contracted, will tend to impede the peristaltic motion of the bowels. Great difficulty in the expulsion of the fæces must likewise arise from the patient, during the spasms, losing the control over those muscles which so materially aid the performance of that function; and also from closure of the anus, by the spasmodic action of the sphincter ani, which is sometimes so rigidly contracted as to prevent the introduction of a glyster pipe. In addition to these causes of constipation,

many of the remedies which are resorted to in the disease must assist greatly in inducing a torpid state of the bowels. Constipation does not, however, invariably attend.

Retention of urine is sometimes occasioned, remarks Mr. C., probably by spasms of the compressor urethræ, and great difficulty has thereby been experienced in the attempt to introduce a catheter. Mr. Morgan states that priapism occurs occasionally; the author has never witnessed it.

The muscles are observed to be relaxed during sleep, a striking example of which occurred to Mr. Mayo, in a boy who recovered from the disease. The spasms, however, in general, return the moment the patients awake. In chronic tetanus, or during the progress of recovery, and when the intervals between the paroxysms are considerable, sleep, the author observes, may ensue and the muscles become relaxed; but in acute tetanus, although sleep may sometimes occur as the result of exhaustion or of narcotic influence, its duration is but for a short period, lasting only until sufficient reaction is established to support the renewal of spasmodic contractions.

The patient is bathed in perspiration, especially during the paroxysms of tetanus; the secretion often possessing a pungent and peculiar smell—but this profuse perspiration, even when it extends over the whole body, is unattended with the slightest amelioration in the symptoms of the disease. A miliary eruption frequently accompanies the perspiration, occasioned probably by the active determination to the skin.

The skin usually feels hot, and it appears that the heat of the body is sometimes above the natural standard. In one case a thermometer placed in the axilla was raised to 110° 75′ Fahr., and in another to 105°.

The urine is usually high coloured, and scanty in quantity, owing, no doubt, to the influence of the cutaneous secretion upon the renal; in two instances observed by Dr. C. where there was scarcely any increase of perspiration, little alteration was noticed either in the colour or quantity of the urine.

"The tongue is generally moist at the commencement, but subsequently, when perspiration becomes profuse, and in cases attended with fever and inflammation, there is excessive thirst, accompanied with a dry state of the tongue. The appetite commonly remains, even when there is inability to swallow.

"The functions of the brain and the organs of sense continue unimpaired, during even the most distressing paroxysms, and the mind is clear and occasionally cheerful. In some few instances delirium has occurred a short time previous to death. The remedies which have been exhibited, may possibly contribute to produce this derangement." p. 22.

Traumatic tetanus is generally unattended with fever. "It is true," remarks Mr. C., "that in some instances even of the traumatic form, fever has been present, and the blood has been found cupped and buffed; but in nearly all such cases the symptoms of tetanus are independent of those of inflammation, the latter sometimes co-existing with the former, but arising from distinct and often accidental

causes." Tetanic symptoms may, however, result from inflammatory action in the medulla spinalis; this, however, rarely occurs in the traumatic, but is occasionally the cause of the idiopathic disease. Inflammation and fever, therefore, when present, must not be viewed as the necessary effects of the spasmodic disease.

"Recovery from tetanus takes place very gradually. Of fifty-eight cases which terminated successfully, eight were cured in the course of a week; three in ten days; four in a fortnight; four recovered at the end of three weeks; fifteen at the end of a month; four after five weeks; eight after six weeks; three at the end of eight weeks; three after two months; and in two the symptoms were not removed till after three months. Even after the spasms have subsided, it is often a long time before the muscles can regain their tone and freedom of action." * * * *

"Even after a slight cramp in the leg, some degree of stiffness in the muscles often remains for several days; but after such violent action as occurs in the paroxysms of tetanus, by which muscular fibres are not unfrequently lacerated and vessels ruptured, a return to their former condition must necessarily be very gradual. The warm bath, friction, and gentle exercise, are the means best adapted to restore the muscles to their original state." pp. 23, 24.

The ordinary causes of death in tetanus are asphyxia and exhaustion, and death is retarded or accelerated, according to the violence of the symptoms, the class of muscles principally affected, and the constitution of the patient. Asphyxia may result from spasmodic closure of the glottis alone, or by the spasms entirely suspending the regular action of the respiratory muscles. When from the first, death occurs somewhat suddenly; when from the latter, death approaches slowly, the respiration being for several hours hurried, laborious and irregular; the lungs become gradually congested; the motions of the chest being impeded, the expulsion of the inspired air is prevented, and thus a fatal termination tardily ensues. Often, however, the two causes acting together speedily put an end to the patient's sufferings; when death takes place from exhaustion, the paroxysms become less acute and frequent, the pulse flags, the muscles relax, the eyes become dim, and the patient gradually sinks.

"In a case of imminent danger from suffocation, it has been suggested that relief might be afforded by an opening made in the trachea. Such a proceeding can only be available when asphyxia is produced by spasm of the muscles of the glottis, in which case tracheotomy might probably afford an opportunity for the exhibition of remedies adapted to control the paroxysms. As these cases are generally very urgent, little more can be expected from the operation than postponement of a fatal issue for a short period; but it would certainly be justifiable as a *dernier resort*. I am not, however, acquainted with any instance in which tracheotomy has been resorted to." p. 26.

The author remarks that we have no data from which a correct estimate can be formed of the frequency of tetanus in comparison with other diseases, of the probability of its occurrence after wounds, or of its mean rate of mortality, either in the traumatic form, or in the idiopathic.

"In the table are included seventy fatal cases, from which it appears that the disease is equally fatal at every period of life, from the age of ten to forty-five. Idiophatic tetanus is far less frequently fatal than traumatic, but the mortality from the former is much greater in warm climates than in the more temperate

regions. Tetanus is both less frequent and less fatal in the female sex than in the male. Of the 128 cases in the table, sixteen were females, being to the males in the proportion of one to eight. Of these 16 cases, 4 only were fatal, whereas, of the 112 cases of males, 66, or more than one half, died. The comparative rarity of tetanus in women is partly accounted for by their being less exposed, both to the predisposing and to the exciting causes of the disease; and since it is observed to occur more frequently in persons of a robust constitution and of great muscular strength, females are supposed to be less susceptible of it."

"In most of the cases in the table, the patients were attacked between the ages of ten and fifty; four only having occurred after the fiftieth year, and three before the age of ten. The duration of the disease before its fatal termination varies considerably, being dependent upon those circumstances alluded to, when describing the immediate cause of death, and it is also often influenced by the extent of the original injury." pp. 29, 30. * * * * *

"In the table, 53 cases were fatal within 8 days after the appearance of the symptoms; 11 by the following day; 15 on the second day after; 8 on the third, 7 on the fourth, 3 on the fifth, 4 on the sixth, 3 on the seventh, and 2 on the eighth, but very few having lasted longer." p. 32.

Causes.—The traumatic, which is the most common form of tetanus, is consequent upon every possible variety of injury, and attacks in every condition of the wound. It occurs after the slightest and most superficial abrasions, as also after the most complicated contusions, lacerations and fractures. In eleven cases in the table it occurred after amputations, four being at the shoulder joint. It has also occurred after excision of the mamma, after the operation of tying the external iliac and the femoral artery; after castration, the operation of cupping, the application of a seton to the chest, the extraction of a tooth, the injection of a hydrocele, a severe flagellation. Larrey has recorded an instance in which the disease was produced by a fishbone lodged in the fauces. Mr. Morgan witnessed two cases consequent upon the blows inflicted by a schoolmaster with his cane—they both terminated fatally. Tetanus is said to occur most frequently after punctures and lacerations of fascious structures and of nerves, and after wounds of the hands and feet. It appears from the table that in 34 instances the disease was occasioned by injuries, many of them very trivial, of the hands and fingers; and in 35 cases by injuries to the feet or toes. In 64 instances the wounds were on some part of the lower extremities; in 46 of the upper extremities. Mr. O'Beirne states that he never saw the disease after an injury of the head, but in eleven cases in the table the wounds were either on the face or scalp. Dr. Rush remarked that there was invariably an absence of inflammation in the wounds causing the disease. In many of the cases in the table the primary wound was completely healed and almost forgotten when the symptoms of tetanus appeared.

The interval between the infliction of the injury and the accession of tetanic symptoms varies considerably. In one case the disease is said to have appeared almost instantaneously; in another within one hour; in a third within two, and in a fourth within eleven hours. In 81 instances symptoms were first developed from the fourth to the fourteenth day after the wound, and in 19 they were evinced on the

tenth day. In 13 cases witnessed by Mr. Dickinson, at Grenada, the period varied from eight to fourteen days. It has been noticed that the longer the interval before the appearance of symptoms, the more chronic is the disease, and the greater the probability of recovery.

"Tetanus is a disease which is met with in every part of the globe, but it occurs oftener in sultry than in temperate climates, and is observed to prevail more at the hot seasons, or during sudden changes from heat to cold, especially in a moist state of the atmosphere. Idiopathic tetanus generally arises after exposure to damp and cold, and even in the traumatic form it has frequently happened that patients have caught cold previous to the accession of symptoms." p. 37. * * *

"Tetanus in every form is a common disease in the West Indies, and it has been noticed that the negroes are more subject to it than the white population and Europeans. * * * This has been attributed by some authors to the negro possessing a greater predisposition to the disease; by others, to his being more frequently subjected to its exciting causes, as exposure to the scorching rays of the sun, and to the night dews, to his working during the rainy seasons and in unhealthy situations, and to his being more liable to the reception of wounds, in consequence of the feet and other parts of the body being unprotected by clothing. To these may be added intestinal worms, and other disorders of the digestive organs, to which, from the nature of his food, he is more subject than the European. Of late years, however, the disease has become less frequent in the West Indian islands than formerly, which is justly ascribed to improvements in the treatment of wounds, in diet, cleanliness and ventilation—to the avoidance of exposure to damp, cold, and sudden vicissitudes of weather, and to greater attention being paid to the state of the bowels. Tetanus is also now much less common in the army and navy than in former years." pp. 40, 41.

Prognosis.—The prognosis in acute tetanus must always be unfavourable. Instances of cure are alluded to by the author, and he remarks, if in the progress of recovery the symptoms have assumed a chronic character, we may fairly infer that the severity of the disease has been diminished, and the symptoms modified by the treatment pursued. In traumatic tetanus without inflammation, as commonly met with, there are several circumstances to be taken into consideration—the climate, sex, state of the wound, duration of the interval between its occurrence and the appearance of tetanic symptoms, the progress of the disease, the class of muscles more particularly affected, the length of interval between the paroxysms, the relation which exists between the natural powers of the patient and the violence of the involuntary muscular contractions. The most important of all is the state of the respiratory muscles. If there be any disposition to spasm in the muscles of the larynx, there is not only imminent risk of suffocation, but the attempt to swallow is so liable to induce a paroxysm, that we are utterly excluded from the opportunity of administering medicines internally, and of fulfilling one most important indication, supplying stimulants and nourishment. In the more chronic forms of tetanus, in those cases in which the access is slow, the spasms by no means violent, the paroxysms slight and occurring at long intervals, and when the patient can obtain sleep, whether traumatic or not, we may generally anticipate a favourable result.

Diagnosis.—The peculiar expression of the countenance in tetanus,

the dragging sensation at the lower part of the sternum, and the sudden increase of the continued contraction at varying intervals, are at all times sufficiently diagnostic.

"The only disease for which it can be mistaken is hydrophobia. In addition to the symptoms just mentioned, it is distinguished from the latter by the normal state of the intellectual functions, and by the nature of the spasms. In hydrophobia there is more or less mental aberration, a restless and sometimes furious state of excitement, accompanied with a remarkable acuteness of the organs of sense and an expression of countenance, and a manner so striking, that when once seen they are rarely forgotten. The spasms, too, are clonic and of short duration, and are succeeded by a period of complete relaxation. It is only those cases of tetanus where the guttural spasms are attended with a dread of fluids that can be mistaken for hydrophobia; but the circumstances already described, together with the difference in the mode of origin and period of access, are fully adequate to prevent these two diseases from being confounded."—p. 42.

Pathological lesions.—The following appearances are often presented by the brain and its membranes, after death from tetanus. "Congestion of the sinuses; the vessels of the pia mater filled with florid blood; more or less increased vascularity of the cerebral substance; slight serous effusions between the membranes and in the ventricles."—In cases of tetanus, in which death has been occasioned by the spasms producing asphyxia, Mr. C. has noticed that the sinuses and larger veins are more particularly congested, and that the blood is of a darker colour than in other cases, where the injection appears to occupy the small arteries, the networks formed by their extreme ramifications being so minutely filled with blood of a florid hue, as often to impart to the pia mater an intensely bright red colour. In some rare instances changes of a permanent nature have been observed. Bouillaud relates the case of a boy, who had, during life, symptoms simulating tetanus, in which a tubercle the size of a large egg, and five or six smaller ones were found after death in the substance of the right hemisphere. In a case described by Dr. Bright, in which the symptoms appeared at the end of four weeks after a blow on the left side of the head, after death there was found a collection of pus about the extent of a large nutmeg, contained in a firm very vascular cyst, within the substance of the brain about the centre of the middle lobe, close to the part where the blow had been received.

Serous effusion with increased vascularity is generally observed in the membranes investing the medulla spinalis, as well as a turgid state of the blood-vessels about the origin of the nerves. These appearances are not, however, invariably met with, for it is distinctly stated in many of the cases in the table, that the spinal marrow and its coverings were natural. Sir Benjamin Brodie mentions thas he has never discovered any morbid changes in these structures in cases of tetanus. In some instances the substance of the medulla has appeared somewhat injected, and in a case related by the author, this seemed to be confined to the anterior columns of the cord. He remarks that in an investigation of the cause of these lesions, the circumstance of position should not be overlooked.

As far as the author's observations enable him to judge in cases of

traumatic tetanus, the appearances which have been alluded to, are, in most instances, to be met with in the spinal canal, but in the cranium they are less frequently detected. Here then, he adds, a question of the utmost practical importance offers itself for consideration; are these appearances to be regarded as indicating that inflammatory action has existed in some part of the brain, spinal cord, or their investing membranes? Inflammation in these structures is viewed as the cause of tetanus by many of the continental pathologists, amongst whom may be mentioned Broussais, Larrey, Magendie, Recamier, Prof. Frank, and Brera; and by Reid, Kennedy, and other writers in England; and as this opinion must influence us very materially in determining the proper mode of treating the disease, it is necessary to examine well the grounds upon which it is founded. After reviewing these and adducing various important facts bearing upon the question, Mr. C. remarks—

"If, therefore, it has been demonstrated, that certain appearances generally observable in the nervous centres in cases of tetanus, are frequently met with under circumstances, and from causes any thing but inflammatory, and that nothing expressive of such action is ordinarily remarked in the state of the pulse, of the blood, or of the secretions of persons affected with this disease; and moreover, if it appears that the morbid changes which are almost the constant results or terminations of active inflammatory disturbance in these important structures are altogether wanting in pure cases of the spasmodic disease, it must then be admitted that tetanus is not entitled to be considered as an inflammatory affection. I say pure cases of the disease, because in coming to this conclusion it is not attempted to deny that tetanus is ever attended with inflammatory symptoms or changes, but only, as will be more fully shown, that the nature of the morbid action giving rise to it is [not] essentially inflammatory. But appearances in the medulla oblongata and spinalis, of a less equivocal character than those already described, are stated to have been found, more particularly in cases of idiopathic tetanus, or of traumatic when occurring after injuries of the head or of the spine. In all those instances, however, of which we have any detail of the history and progress, during life, it will be seen that they were clearly distinguished by symptoms sufficiently expressive of an inflammatory character. The prominent symptoms referrible to inflammation in the spinal cord and its membranes, according to Parent-Duchatelet and Martinet, Ollivier, and Abercrombie are, an acute pain extending in the direction of the spine—tetanic contraction of the muscles, especially of the back, and posterior part of the neck, sometimes producing complete opisthotonos—rigidity of the muscles of the extremities, and very frequently paralysis—febrile disturbance, with a quick pulse—restlessness, and occasionally high delirium, the patient often dying comatose. But although inflammatory affections of the medulla and its membranes, are clearly distinguished from genuine tetanus by some of its leading symptoms, yet the concurrence of permanent contraction of the muscles, especially in cases where the spasms are severe, and the inflammation is the consequence of external violence, has caused many of them to be mistaken for the latter disease."—pp. 54, 55.

In some few instances blood has been found extravasated within the spinal sheath—other morbid changes, of an anomalous character, have been discovered, the causes of which, as well as their connexion with the disease under consideration, are far less obvious than those already described. The changes alluded to, are a deposition of a red and very consistent fluid in the cellular texture between the dura

mater of the cord and the bony canal of the spine, in the dorsal region, serous effusion within the membranes, and the arachnoid of the medulla covered with an albuminous concretion for four inches (Ollivier;) a large quantity of viscid yellow serum under the outer covering of the spinal cord (Burserius;) bony and cartilaginous deposits beneath the arachnoid of the medulla spinalis in the dorsal and lumbar regions, distinct, small in size, and of the thinness of paper; increased vascularity of the spinal marrow with considerable effusion and a number of small bony patches on the pia mater of the cord; small laminæ of bone on the dorsal division of the cord. Travers states that in the cases which have come under his notice, some morbid deposition of this kind was discovered in the substance of the arachnoid tunic covering the medulla in five out of eight; the author, however, has examined the spine with care in at least a dozen cases, but has never met with it.

Mr. Swan states that after tetanus he has observed a preternaturally injected state of the minute vessels supplying the ganglia of the sympathetic, especially the cervical and semi-lunar. Similar appearances had been previously noticed by Dr. Aronssohn and Andral. On two occasions the author has found the cervical ganglia unusually vascular, whereas, in another instance they were natural. Dupuy states, that he has frequently discovered inflammation and disorganization of these ganglia, and of other nervous trunks in horses that have died of tetanus.

The nerves have, in several instances, been found injured, torn, or lacerated, and inflamed at the seat of the original wound—and in a few cases splinters of wood, bone, and other foreign substances have been detected imbedded in or in contact with the principal nerves in the vicinity of the wound. In some instances redness or unusual vascularity of nerves has not been confined to the seat of the wound, but was observed in different parts of their course as far as their origin rom the spinal marrow.

"The consequence, remarks the author, of a continuance of inflammation in a nerve is a deposition of coagulable lymph between its fibrils, causing an increase in size, which is distinctly seen in the extremities of the nerves affected with chronic inflammation after amputation. This morbid change was remarked at the seat of the wound in several of the cases which have been mentioned, for the nerves are described to have been thickened, swollen and red. But in other cases the appearances, amounting to nothing more than preternatural injection, cannot be considered as consequent upon inflammatory action."—p. 74.

The violent action to which the muscles are excited in tetanus, has occasioned, in severe cases of the disease, serious lesions of their structure. These consist chiefly in laceration, a softened state of their fibres and effusion of blood upon their surface, or within the sheath of those of the extremities and abdomen. "The muscles, remarks Mr. C., are not only unusually rigid after death, but the disposition in the blood to coagulate is often delayed, and sometimes even altogether lost."

The lungs are often found gorged with blood, and sometimes in a state of engouement. The state of asphyxia, in which the disease so

frequently terminates, is quite sufficient to account for this condition. An inflamed state of the mucous membrane of the alimentary canal after tetanus is noticed by Swan, M'Arthur and Andral. Many writers notice the frequency with which worms are found in the bodies of those who have died from tetanus; whether their presence had any agency in the production of the disease is considered doubtful. The papillæ maximæ, at the root of the tongue, are sometimes found hypertrophied, and the mucous lining of the larynx highly injected, and containing a quantity of frothy mucus. Larrey observed, in most of the bodies of the tetanic patients he examined, the pharynx and œsophagus much contracted, and their internal membrane red, inflamed, and covered with a viscid, reddish mucus. Similar appearances are generally met with after death from hydrophobia. In both cases they are readily accounted for by the spasms and irritations that exist in those parts during life.

The author enters next upon the consideration of the "Theory of tetanus;" on this subject we shall be able to present only his general summary:—

"From what has been observed in the foregoing pages, I am induced to infer,—

"1. That tetanus is a functional disease of the nervous system, that is to say, a disease unaccompanied with any perceptible lesion of structure, the nature of which, although essentially distinct from inflammation, is completely unknown. There are, therefore, no morbid changes peculiar to tetanus, and by which it can be recognised.

"2. That the seat of this peculiar morbid action, termed *tetanic irritation*, is the *tractus motorius*, on either side, wholly or in part, the superior being the portion most generally affected.

"3. That the result of tetanic irritation in the tractus motorius, or medulla, is a supply to the muscles of a stimulus to abnormal action, which, although limited to the muscles subservient to the will, is, nevertheless, totally without its control.

"4. The tetanic irritation is excited in two ways; *first*, by a noxious impression propagated to the medulla from distant nerves, (most probably sentient) which impression may be caused by a wound, cold, or any other source of irritation; *secondly*, by inflammation in the brain, spinal cord, or their investing membranes, either idiopathic or occasioned by direct injury to these structures, or extending continuously from the nerves of a wounded part to the medulla. Traumatic tetanus commonly arises in the first way, its origin in direct injury to the cord, or in inflammation extending from an injured nerve, being exceeding rare.

"5. That in pure traumatic tetanus, the primary impression is confined for an indefinite time to the nerves of the part injured, being transmitted at some subsequent period to the medulla, and thus exciting the disease.

"6. That when tetanic irritation is once fully excited in the medulla, which is made manifest by spasmodic contractions in the muscles, the disease is independent of the exciting cause, and does not cease upon its removal.

"7. That the nervous system in some individuals is more disposed to take on this morbid action than in others, and that as a general rule, males are more susceptible of it than females, and negroes than whites.

"8. That certain morbid states, as disorders of the digestive organs, the influence of particular climates, and a deleterious atmosphere, render the system more susceptible of this disease.

"9. That the derangement of the vital organs in tetanus is the result of the inordinate action of the voluntary muscles induced by the disease; the disturbance and suspension of different functions, and even fatal exhaustion, being chiefly if not solely, referable to the violent muscular contractions. In fact, the tetanic irritation directly interferes with, or affects, no organ nor part whatever besides the system of voluntary muscles.

"10. That tetanic irritation often gives rise to a determination of blood to the cord and its meninges, and to the nerves proceeding from the site of the wound and to the affected muscles, the result of which, in the medulla, is an increase in the natural secretion of the arachnoid. The minute vascular injection of the cord and the nerves, together with the serous effusion at the base of the brain and between the spinal membranes, being nothing more than occasional effects of the disease, are by no means constantly present after death." pp. 121–3.

In regard to the *treatment of tetanus*, the author considers first those means which have been proposed with the view of arresting the symptoms of the disease, by removing or altering the morbid action in the part which appeared to be primarily deranged. The application to the local injury of stimulants as a prophylactic measure the author totally rejects as being unsanctioned by experience of its utility, and unsupported by any rational views of the pathology of tetanus.

"To prevent the propagation from the wound of the irritation supposed to be the cause of the disease, two plans, remarks Dr. C., have been adopted: 1. Amputation or excision of the wounded part: 2. Division of the nerves proceeding to the seat of injury."—pp. 127–8.

1. *Amputation.*—After enumerating the evidence adduced for and against the operation, Mr. C. remarks, that although in several of the cases recorded in which early amputation appeared to be beneficial, "it is almost impossible to ascertain, with certainty, how far amputation was of service, yet it must be admitted that some of them, particularly the case recorded by Mr. Wayte, tend to confirm the propriety of the practice recommended by Larrey. The evidence, however, of the English army surgeons of late years is by no means favourable." In the hands of M'Gregor, Hennen, Guthrie, Cooper, Grimstone, and Brodie, as well as of Dupuytren it was found to be of no benefit in arresting the disease.

"Many nerves are necessarily divided in this operation, and cases have been adduced in which tetanus was the sequel of its performance. It is altogether so severe and serious a mode of treating the disease, that we can scarcely ever be warranted in resorting to it when the original wound is slight, especially as, if employed under the most favourable circumstances, a successful issue can never be depended on. In chronic tetanus, as patients usually recover, it is certainly inadmissible, even when the wound is severe and in an unfavourable state, unless its condition be sufficiently bad to demand the operation independently of the spasms. Amputation can only be regarded as a justifiable proceeding after a severe injury of the extremities, as a compound fracture, or an extensive laceration, immediately that there is the slightest indication of spasm; for if delayed until the disease is more advanced, instead of proving beneficial, it will tend rather to aggravate the symptoms, and to render the constitution less able to sustain the debilitating effects of the spasms." pp. 131–2.

2. *Division of the Nerves.*—This operation was adopted with success by Baron Larrey in two cases after symptoms of tetanus had occurred, and by Dr. Murray in one case under similar circumstances,

which are the only instances on record where this method of treatment was employed.

"In the first case," Mr. C. remarks that "however beneficial the operation might have proved in relieving the parts, it is very questionable whether the good effects which followed were in any degree owing to the division of nerves. In the other three, the nerves were divided as soon as there was the slightest indication of tetanic symptoms; and it is fair to presume, that an attack of the disease was warded off by the operation. As was remarked of amputation, unless the operation be performed very early, there can be little hope of a favourable result. When it is feasible to divide all the nerves proceeding to a slight wound, this plan is infinitely preferable to amputation, since all the advantages of the latter may be obtained by an operation far less painful, severe and serious in its consequences. Paralysis may be the immediate, but it is not likely to be a permanent result. This operation, therefore, may be regarded as well worthy of further trial."—pp. 135–6.

The author notices the suggestion of Dr. Pennock, of this city, to employ pressure by weights, or ligatures, or to apply exhausted cups over the wound or in its immediate vicinity in order to paralyse the wounded nerves, and thus prevent the occurrence of tetanus; and if in this manner the constitutional symptoms should be arrested, as a security against their return, to make, before the cup is removed, an incision so extensive as effectually to remove the wounded portion of the nerves; and remarks in relation to it that "if in a case in which the wound is cutaneous, there is any hesitation in dividing the nerves, this proceeding might be tried."

Constitutional Treatment. *Purgatives.*—As sources of irritation in the intestinal canal, and obstinate costiveness so frequently exist in cases of tetanus, too much importance, Mr. C. remarks, cannot be attached to the employment of purgatives. A brisk cathartic, by causing the expulsion of worms or unhealthy fæces, has produced almost immediate relief in the idiopathic form.

"Perhaps one of the most important consequences of the free operation of purgatives arises from their favouring the action of those remedies which more immediately influence spasmodic contractions of the muscles; indeed, until the bowels have been fully relieved, it is almost useless to resort to other medicines. Those purgatives should be selected which, being readily soluble, act quickly and powerfully on the intestinal canal, as castor oil, oil of turpentine, and croton oil, especially the latter, since in addition to its active and rapid operation, in cases of difficult deglutition, a few drops upon the tongue will generally be sufficient to obtain the required effects."—p. 138.

When spasm of the sphincter or levator ani muscles causes an impediment to the free evacuation of the fæces, an enema of an infusion of the tobacco leaf, or containing laudanum, will, most probably, be found successful. In cases where no intestinal derangement or irregularity appears to exist, not only should a full dose of castor oil be given, but the action of the bowels must be steadily maintained throughout the disease.

"Having removed any source of irritation existing in the intestinal canal, the next important indication is to allay the excitement in the nervous system giving rise to undue muscular action. For this purpose, depletion, and all kinds of sedatives and antispasmodics have been freely resorted to. Camphor, musk, digitalis, stramonium, conium, hyosciamus, belladona, and lead, have proved utterly inadequate."—p. 139.

Mercury has been frequently tried, and administered to the extent of producing ptyalism, both in idiopathic and in traumatic tetanus. The experience of Larrey, M'Gregor, Mosely, Wells, Carlisle, Thompson of Jamaica, Maxwell, Swan and Howship is decidedly unfavourable to the curative effects of the remedy. In fifty-three cases where it was employed, thirty-one proved fatal. Of the twenty-two cases which recovered, in one, it is stated, that although salavation was produced, the symptoms continued to increase until the quantity of opium was augmented. In another case mercury was not resorted to until the disease had been established seventeen days; and in a third the patient was improving before ptyalism was produced. In twenty of these cases of recovery, opium was combined with the mercury; and of the two treated without it, in one tobacco injections were employed. In eleven of the cases in which mercury was used alone, or in conjunction with some trivial remedy, as the warm bath or blisters, all proved fatal except one. To the influence of mercury in arresting the progress of inflammation may, according to Mr. C., be attributed its efficacy in tetanus when attended with inflammatory or febrile disturbance; and in cases in which tetanic spasms are consequent upon inflammation in the spinal cord or its membranes, he believes that great benefit may result from its free exhibition.

Blood-letting. Tetanus not being essentially an inflammatory disease, most cases of the traumatic form being unaccompanied with febrile disturbance, or with any symptoms indicating the necessity for active depletion, an antiphlogistic treatment is, therefore, generally unnecessary for its removal; but in those cases where inflammation is the cause of the tetanic irritation, which though rare in the traumatic form, is a frequent occurrence in the idiopathic, abstraction of blood may be highly beneficial—but so soon as the fever and inflammation have subsided, sedatives may afterwards be necessary, for although the cause originally inducing the disease has been removed, the spasms sometimes remain. Mr. Swan and others have advised blood-letting with the view of removing congestion of the vessels of the medulla spinalis; the author, however, observes, that unless other circumstances indicated the propriety of local depletion, such a practice should be adopted with the utmost caution, since in some cases it might aggravate, and in none is it likely to remove the disease.

Of twenty-six of the cases in which blood was abstracted and other remedies also resorted to, thirteen died. Two other cases unattended with inflammatory symptoms, were treated by bleeding alone; both terminated fatally. In another case the pulse was full and strong, beating about 140 in a minute; Mr. Earle bled the patient repeatedly, and, after every venesection there was decided remission of the spasms. The blood was remarkably buffed and cupped, he seemed to be in a fair way for recovery, when the disease was, upon two occasions, aggravated by the friends giving him, most injudiciously, wine and porter. He died afterwards, apparently from exhaustion.

Loss of blood appears to favour the operation of medicines in this disease, as in other affections.

"In traumatic tetanus occurring to a highly plethoric individual, with a hard and full pulse, but without any symptoms of febrile disturbance, bleeding may sometimes perhaps be resorted to with advantage in the first instance, although I should always be backward in employing it. But, at a more advanced stage of the disease, and in a debilitated state of the system, even moderate bleeding is altogether inadmissible." p. 149. * * *

"*Counter irritation*, either over the affected muscles or in the course of the spine, is of no service, unless the disease be inflammatory, in which case benefit may perhaps result from the application of it along the back. Dr. Chalmers states that blisters have a most pernicious effect; and the only advantage to be gained from them in pure traumatic tetanus, arises from their rendering the cutaneous surface favourable for the absorption of appropriate remedies." p. 150.

Opium. There is no question that in many instances opium has succeeded in allaying tetanic spasms; but, as it is resorted to in by far the greater number of the cases which occur, too much importance must not be attached to its occasional success. Opium, in various forms, and in conjunction with other remedies, was employed in eighty-four cases. Of these, forty-five recovered, of which ten were females. The result of the ample trial which it has had, both in small and large doses, frequently repeated, has tended, notwithstanding, to diminish the confidence of practitioners in its efficacy. Sir James M'Gregor declares that from the extensive trials he has made in tetanus with opium and mercury, he considers them as perfectly inert when the disease is acute or fully formed; they should only, he adds, be used as adjuvantia. Mr. Travers remarks that opium is both inefficient and objectionable. "In idiopathic tetanus, in this climate, after a free action of the bowels, opium generally succeeds in removing the spasms. Experience, however, has fully shown, in whatever way it may be explained, that when exhibited, even in the largest doses, this remedy cannot be relied on in the treatment of the acute form." Mr. C. believes that in traumatic tetanus, if no amelioration or effect result in a short time from a full but not inordinate dose of opium once or twice repeated, it will be utterly useless, and indeed a most fruitless loss of time, to persevere in the administration of it in still larger doses.

"In the treatment of tetanus it is a most important consideration that the system can be effected by remedies introduced into the large intestines. When medicines taken by the mouth fail in producing their effects—when the trismus is complete, or when the risk of suffocation precludes even the attempt to swallow or to introduce an elastic instrument into the stomach through the nostrils, we may sometimes succeed in this way in obtaining the influence of opium. This remedy has indeed been exhibited in glysters upon several occasions with advantage. In two cases of acute traumatic tetanus, unaccompanied with inflammatory symptoms, I have seen recover, the spasms were gradually removed by laudanum injections frequently repeated, so as to keep the system constantly under narcotic influence." * * * In a few of the cases, referred to in the table, opiate injections were resorted to in conjunction with other remedies, and in some instances with a successful result.

"In the fourth volume of the Medical Transactions, there is a paper by Dr. Latham, in which the pulvis ipecacuanhæ composita is strongly recommended, and several cases are related in which it appears to have been given with success, in doses of 10 grs. every two or four hours. Of three cases in the table, treated with Dover's powder, two recovered. The beneficial influence of this preparation must be attributed to the opium which it contains.

"Dr. Stutz of Suabia, has published the particulars of three cases of traumatic tetanus which were cured by opium combined with alkalies, and warm baths impregnated with the deutoxyde of potassium and lime. It is supposed that the alkali favours the operation of opium upon the system. I do not know what benefit could be derived from the baths, but M. Fournier-Pescay mentions that he has succeeded in curing a case by baths medicated in this way." p. 163. * * *

Tobacco.—"The earlier writers had great confidence in the efficacy of tobacco, especially of the ol. tabaci, when applied externally to the neck and back.—Campet, who had considerable opportunities of witnessing the disease in the French colonies, appears in the last century to have employed tobacco injections with very great benefit in conjunction with wine by the mouth; and he has related several cases in which it proved successful. Attention has, however, been more recently directed to this remedy in this country by a paper in the 3d vol. of the Dublin Hospital Reports, by Mr. O'Beirne, and from some cases published in the Edinburgh Medico-Chirurgical Transactions by Dr. Anderson." p. 163–4.

Of nineteen cases in which tobacco was employed, nine recovered. Of the ten fatal cases it must be remarked, that in one the remedy was not resorted to till the patient was dying. In two other cases it would appear that the remedy was not fairly tried. In another case there was organic disease of the brain, and in a fifth case the symptoms were always moderated after the injections, but the patient was not kept constantly under their influence. In a sixth case, of remarkable severity, the remedy was scarcely resorted to in time. In the two cases treated by Mr. Carmichael, it does not appear that the tobacco was exhibited to an extent sufficient to produce that powerful impression upon the system by which alone the spasms in the acuter forms of the disease can be combated. Of the remaining two cases the author witnessed the treatment, in the one he conceives that the exhibition of the tobacco was carried too far, and the patient being already much exhausted from the effects of the disease, it undoubtedly accelerated his death: in the other he states it to be somewhat difficult to determine how far the tobacco was beneficial or otherwise. The patient was evidently not kept constantly under its influence, although the spasms were several times relaxed after its exhibition; and if, when first resorted to, it had been increased in proportion to its effects, the patient, being very carefully watched, Mr. C. is inclined to believe that the spasms might have been subdued. "Large doses certainly should not be employed at first, but as it appears that the repeated use of tobacco generally renders the system less susceptible to its influence, in nearly all instances it will afterwards be necessary to increase the quantity." Mr. Travers has given his testimony strongly in favour of the remedy.

"I conceive, remarks Mr. C., that more has now been advanced in proof of the efficacy of tobacco than can be adduced in favour of any other remedy yet resorted to. I have not, indeed, succeeded in finding a single case, in which, being fully and fairly tried before the powers of the constitution had given way, it has been known to fail. Many more cases have been cured by the use of opium, and for the obvious reason, that a far larger number have been treated with it. Tobacco is a more certain and potent sedative than opium, the latter being a remedy that can never be relied on, having failed far oftener than it has cured. * * * I would not say that tobacco is a remedy, which, even resorted to at

an early period, and employed with judgment, will always avail;—for I believe, that in its worst forms, tetanus is a disease of too destructive a nature to be arrested by any treatment whatever. But I hold it to be the best remedy that we at present possess, and one which will generally be found capable of diminishing the severity of the acute disease, and often of subduing it altogether." p. 177–8.

During the use of the tobacco the patient must be supported by a nourishing diet, tonics, wine, and other stimulants. The carbonate of ammonia in particular is well adapted to counteract the extreme prostration sometimes induced. At first a scruple of the tobacco leaf, infused in eight ounces of water, will be enough for an injection, which must afterwards be increased in strength in proportion to its effects. A stronger infusion will be necessary for those who are accustomed to the use of tobacco as a luxury. Unless in chronic tetanus, baths impregnated with the plant are not only insufficient, but objectionable.

Antimony has sometimes been employed for the relief of tetanus. Of ten cases in which it was resorted to, six were fatal, but in these the disease was very acute. The remedy is best adapted for the more chronic forms of the disease. It is objectionable when the muscles of the larynx are affected, as the nausea and sickness it produces add to the patient's distress, and are liable to produce paroxysms.

Cold affusion.—To produce the sedative influence to which the efficacy of cold affusion must be ascribed, the water should be at a temperature but little above the freezing point, poured in a continuous stream and from a considerable height. Employed in this way it produces the utmost prostration, and it may be carried to the extent of causing fatal syncope. A less powerful impression may be made by suddenly dashing water on the body of the patient, or by plunging him in a cold bath. The primary effect of cold affusion is often a severe and sudden exacerbation of the spasms, which sometimes proves fatal. It must be acknowledged that the evidence in favour of cold affusion chiefly refers to cases of the idiopathic form of tetanus, in which it has been extensively employed by Dr. Wright, Dr. Cochrane, and other practitioners. The author cannot, however, agree with Mr. S. Cooper, that it presents no hope of benefit in cases of tetanus arising from wounds. It has been shewn that cold is eminently adapted to fulfil the most important indication in the treatment, the production of a sudden and powerful sedative impression; and it will be found that in most of those traumatic cases where it fails, this impression is not effectually made. Dr. Wright has recorded two traumatic cases which were cured by the use of the cold bath; and Sir Benjamin Brodie is reported to have found cold affusion of more service than any other remedy he has employed. Of twelve cases in the table in which cold affusion and other means were adopted, seven terminated favourably.

"With the exception of tobacco," says the author, "I know of no remedy so well adapted to produce an impression on the nervous system, of power adequate to control the severe spasms of this disease, as cold affusion. I believe that even in the most aggravated cases, by boldly persevering in the application

of it until syncope or extreme depression of the vital powers is produced, the spasms may be completely removed. Unless, however, a powerful impression is made, and even kept up for some time, and the remedy repeated as soon as the spasms recur, it will prove ineffectual. The utmost care is necessary not to carry it so far as to take away all power of reaction, and it may be desirable to administer brandy or a diffusible stimulant during the operation. The remedy possesses this advantage, that other means, fitted to cause the same effects, may always be combined with it. Cold affusion is certainly not a remedy unattended with danger, even when judiciously exhibited; but, unless practised with boldness and perseverance, it had far better never be resorted to." p. 184.

Three cases strikingly exemplifying the efficacy of cold affusion are related in the *Nouv. Bibliothèq. Médicale* for March, 1828, by Dr. Doucet.

Warm bath.—Although no benefit whatever can be expected from the use of this remedy in the severest forms of the disease, it may be useful in promoting recovery in chronic cases, and in relieving the uneasiness and stiffness so often remaining, for some length of time after an attack of acute tetanus.

Vapour bath.—"The effects upon the system of a vapour bath at a high temperature are very similar to those of the warm bath. * * Dr. Edwards has shown, however, that there is a remarkable advantage in the vapour bath over the liquid bath, because, in the former, the air is in communication with the whole cutaneous surface, whereas, it is excluded from nearly the whole extent of the skin in the latter. If hot baths be employed, this advantage is of no slight importance, since, in order to keep the spasms under control, it will be necessary to subject patients to their influence for some length of time. But however useful they may prove in relieving the symptoms of chronic tetanus, we must by no means rely on them in the treatment of the acute form of the disease." p. 190–1.

Tonics and stimulants.—"The efficacy of tonics and stimulants in the treatment of tetanus, is supported by the testimonies of Drs. Wright, Currie, Rush, Hosack, and other practitioners. * * In that state of debility and exhaustion occasioned by the continuance of tetanic spasms, which is often greatly increased by the curative means employed, the free exhibition of tonics and stimulants becomes absolutely necessary to sustain the sinking powers of life. In the extreme prostration produced by tobacco and cold effusion, without them, these depressing remedies would frequently be almost as dangerous as the disease." p. 191–2.

Under such circumstances the author is satisfied with Mr. Travers, that too much importance cannot be attached to their employment, and that they must be regarded not only as useful, but as necessary remedies in the treatment of tetanus.

Carbonate of iron, though a tonic, is supposed to exert a specific influence over several nervous affections, and it has been strongly recommended by Dr. Elliotson as a remedy in tetanus. In three of five cases adduced by Mr. C., the exhibition of large doses of the carbonate of iron appears to have been attended with success. There is, however, he observes, no sufficient reason for considering that it exerts a specific influence over the disease. Tetanus, when occurring in individuals of a strong constitution, there is every reason to believe would wear itself out in many cases without the interference of medical treatment, and that in other instances, simply by counteracting with tonics and stimulants the debility and exhaustion consequent

upon its continuance, the spasms would slowly and gradually subside; but in severe cases the risk of suffocation is too great to justify this course of proceeding. As a tonic, the author considers the carb. ferri to be a most valuable medicine; and in chronic tetanus free from fever, or in promoting recovery from the acute form after the more severe spasms have been subdued, it may often be highly useful; but when the symptoms are urgent, to depend on a remedy that is stated to require two or three days to exert its influence cannot be viewed as a rational practice.

Hydrocyanic acid. The effects of this article, the author considers, render it obviously ill adapted to afford relief in tetanus; and the few trials that have been made of it do not seem to have been attended with much success.

The *colchicum autumnale* has been recommended as a remedy for tetanus by Dufresnoy; and Dr. Smith of the United States declares, that of four cases treated by him with the vinous tincture, three recovered.

The injection of opiates into the veins has been employed in the treatment of tetanus, the evidence in its favour is by no means, however, satisfactory.

The powerful sedative effects produced by the upas antiar and the ticunas, the author thinks might justify a trial of them, in such a formidable disease as acute tetanus.

Mr. C. thus concludes his account of the treatment of tetanus:—

"*Pure acute tetanus.* If the disease be traumatic, and the patient is seen at the very onset, topical means may be applicable. The medical treatment of this form, mainly consists in maintaining a free action of the bowels, in allaying the spasms with the tobacco, cold affusion or any other sedative equally effective, and in the due exhibition of tonics and stimulants. Here success, especially in cases attended with impending suffocation, chiefly depends upon the energy, perseverance, and judgment with which the necessary means are employed. No time must be lost in the trial of inactive remedies, or of such as experience has demonstrated generally to fail. From the period that the patient is first seen, he should never be left until the spasms are in a great degree relieved. * * * By the use of cold effusion, or of tobacco, they can generally be controlled. These remedies, therefore, must be vigorously employed and persevered in, until the required effects are obtained. * * Tobacco being more manageable, and if employed with sufficient care, unattended with danger, is preferable to cold affusion, which might only be used when the other remedy is unattainable.

"*Acute inflammatory tetanus.* The means necessary for the removal of this form of the disease are, purgatives, local and general depletion, counter irritation, mercury. As the tetanic irritation is here excited by active inflammatory action, in some part of the cerebro-spinal centre, or its membranes, the most energetic antiphlogistic measures must be pursued, until the symptoms of inflammation are subdued. Should, however, the spasms still continue, tetanic irritation remaining after its exciting cause is removed, the means recommended for the treatment of the first form, or of the third, according to the severity of the muscular contractions, must be then resorted to.

"*Chronic tetanus.* The following remedies may be variously resorted to, according to the particular circumstances of the case. Purgatives, opium, antimony, vapour and warm water baths, the carbonate of iron, and other tonics, electricity. If the case be attended with febrile or inflammatory symptoms, proper means must be taken to remove them. In such instances the exhibition

of opium, and other sedatives, may often be advantageously combined with antiphlogistic treatment; and it should be borne in mind, that although the spasms may be partly allayed by depletion, their complete removal does not depend upon the extent to which it is carried; and that the debility resulting from active depletion, is invariably prejudicial to ultimate recovery from tetanic irritation."—pp. 203–5.

TETANUS OR TRISMUS NASCENTIUM. "This is a variety of traumatic tetanus, occurring in children soon after birth; generally in the course of the first week, or before the ninth day, having scarcely ever been observed to supervene at a later period than a fortnight. The muscles most frequently affected are those of the lower jaw, hence the term trismus is commonly applied to this disease; but as many of the other muscles almost invariably participate, the term tetanus nascentium is more appropriate." * *

"Like other forms of tetanus, it is more frequent in warm climates, especially in the West Indies, where the disease is the cause of mortality to so great an extent that one writer (Rush) states, 'that a tenth of all the children that are born die of it.' * * As was observed of traumatic tetanus, negro children are more subject to it than white, which appears to be partly owing to the greater care taken with the latter after birth.'"—pp. 207–9.

It has been stated that this disease is only a variety of the traumatic form of tetanus; and that the injury done to the umbilical cord in its division or separation, bears the same relation to tetanus nascentium, as the primary wound to traumatic tetanus. Dr. Colles of Dublin, has attempted to show that the immediate cause of the affection is inflammation and ulceration of the umbilicus. Appearances confirmatory of this opinion he states to have occurred in all the tetanic cases which he inspected, but not in infants of the same age who had died of other diseases; the author is induced to regard these, however, as little else than the ordinary results of the natural process towards the obliteration and closure of those vessels which, after birth, become useless. This view is corroborated by the investigations of Dr. Labatt of the Dublin Lying-in Hospital, and by Dr. Thompson of Jamaica. Heustis, Campet, and others, attribute the disease to injury done to the umbilicus in dividing and dressing the cord. But the author apprehends no greater importance can be attached to an inflamed or unhealthy aspect of the umbilical parts, than to view it as sympathetic of, and indicating constitutional derangement, either from disorder in the alimentary canal, a vitiated state of the atmosphere, or other causes, a condition eminently favourable to the production of every form of tetanus.

"The following are considered the predisposing causes of tetanus nascentium;—unwholesome nutriment—irritation of the intestinal mucous membrane, from the retention of unhealthy secretions, or from acrid purgatives—an impure atmosphere—damp and cold."—p. 216.

"In the treatment of this disease the same principles should be acted upon as in the treatment of traumatic tetanus. Having cleared out the alimentary canal with castor oil, or the hydrargyrum cum cretâ, small doses of laudanum may be given—one, two, or more drops, as may appear necessary, every hour, until rest is obtained or the spasms are relaxed. Should any difficulty be experienced in the exhibition of remedies by the mouth, injections might be employed."—p. 218.

D. F. C.

BIBLIOGRAPHICAL NOTICES.

ART. XIII. *Observations on the nature and treatment of Calculous Diseases.* By BENJAMIN H. DUDLEY, M. D., Lexington, Kentucky, 1836. 8vo. pp.

This pamphlet deserves notice, as well from the high character of its author, as from the success attending his practice. Eminent practitioners render an important service to the profession by publishing the fruits of their experience, and the means employed to achieve their triumphs. Neglect of this kind is a violation of the duty which every man owes to posterity. How many bitter regrets have been expressed that *Raw*, the eminent and successful lithotomist of Holland, should have died without bequeathing to his professional brethren, an accurate description of his successful operations.

In noticing the causes of primary calculi, Dr. Dudley confirms the opinions of many European surgeons, that this disease rarely occurs in high and low latitudes. He states, for example, "that as many cases have been operated upon for stone *here* [Kentucky] in one season, as appears to have occurred in all New England in a period of twenty years. It is in temperate regions, and especially where the waters are of an impure quality, holding in solution carbonate of lime, and other mineral substances unfriendly to the healthy and vigorous action of the stomach, that it is familiarly known to all classes of society, and is acknowledged to be one of great and distressing frequency."

The causes which influence the kidneys to secrete calculous matter is still involved in much obscurity. In England it is attributed to the free use of malt liquors—in France to wine, and in this country where neither are drunk in abundance, to limestone water. It is doubtful whether the latter agent has more influence in the production of this disease, than the two former. We certainly know of many limestone districts where the inhabitants are remarkably exempt from this affection. For example, in the Great Valley of Chester county, in this state, where limestone abounds in every part of it, a case of stone is of rare occurrence. A highly respectable physician, who has been in extensive practice there for twenty years, has never seen a case of it.

The causes then which contribute to the formation of calculi, are yet to be explained. The true cause no doubt will be ultimately traced to disease or injuries to the nervous system. The sound condition of this tissue is essential to produce healthful secretions of the organs to which the nerves are distributed. This fact has been conclusively established by Wilson Phillip, so far as regards the stomach; and he adds, that in all cases of spinal irritation, the kidnies secrete an abundance of sabulous matter. We have frequently remarked this symptom of the disease, and have observed also a large quantity of this secretion follow concussion of the spinal marrow, floating in a turbid, offensive and irritating urine. There is a case recorded in Duncan's Medical Commentaries, of an enormously large calculus, taken from the bladder of a man who had some years before received a severe injury of his spine. He had no symtom of this disease previously to the injury.

We are not disposed to contradict the opinion of Dr. Dudley, that this disease is always preceded by "chronic derangement of the digestive organs," as the continued existence of it strengthens our position. Every one will admit

that neuralgia is almost invariably connected with disordered digestion. In tracing a history of calculous cases you will be informed, that the existence of the disease is preceded by pain along the course of the spine. We are aware that this symptom has been attributed to the irritation of gravel in the kidneys, but we positively know, that spinal irritation is accompanied by pain in the back, neuralgic pains shooting down the thighs, and that this disease will cause an abundant secretion of calculous matter, why not then refer the pain to the same rational source?

Dr. Dudley errs in attributing disease of the stomach to drinking lime-stone water. *Those accustomed* to this beverage are as healthy as any people in the United States, and as free from disease.

In speaking of the difference between the comparative liability of the male and female to calculus, the author remarks that "out of one hundred and thirty-five individuals who have submitted to the operation, eight only were females." He adds that Africans are remarkably exempt from this disease, five only of the above number were of that race. As the negroes constitute one fourth of the population of Kentucky, and as the relative liability of the two varieties of the human family is as five to one hundred and thirty, the opinion of Dudley on this point is perfectly correct, though this is the first time our attention has been drawn to this important fact.

In stating the conditions under which lithotomy may be performed with the best prospects of success, he cautions his readers to avoid operating in case of ulcerations or hemorrhage from the bladder—enlargement, and disease of the prostate gland. "But of all states of the organ, that wherein there is great reduction in size, with a ribbed and indurated interior, as indicated by the movement of the sound in exploring its cavity, is the least propitious to recovery. Such a disease in the bladder is independent of, although an occasional attendant upon calculus, and in all instances of its occurrence, it is found to be the most destructive in its tendency. The calculus accumulations in these cases amount to little more than a collection of sand, which the organ is incapable of expelling; while the suffering of the patient is of the most excruciating kind."

The operator very properly attaches great importance to the judicious preparation of his patients for this operation. Among the salutary means recommended, the warm bath, "added to the *free and judicious use of emetics*, repeated as they may be indicated by the deranged state of the stomach, or the febrile condition of the system, together with mercurial cathartics, as called for by the state of the liver and bowels."

In the estimation of the *solidists* of the present day, "the deranged state of the stomach" is rather an equivocal phrase. If the author mean an irritation of this organ, or unhealthy secretions in consequence of such irritation, repeated emetics would not seem to be the appropriate remedy; but as unparalleled success has resulted from this management, we scarcely feel warranted in questioning the propriety of this practice.

He recommends during the state of preparation such articles of drink and food as impose the smallest amount of labour upon the digestive organs, and communicate the least excitement to the system. In some instances, "the patient required medical attention for two or three months, to place him in a condition to justify an operation." Observation has impressed on him "the paramount importance of putting the general system of all patients requiring operations into a healthy state "in order to insure a happy issue. I am the more explicit here because I know that many surgeons pay but little attention to the medical treatment of their patients either before or after an operation, while they esteem their labour as nearly at an end when the dressings have been properly adjusted to the wound. This is indeed a very partial view of professional responsibility; and leads to consequences not less fatal to society, than humiliating

to the practitioner. The preparation for, and the treatment consequent to all critical operations is even more important than the greatest skill in the use of instruments."

All judicious surgeons will fully concur with Dr. Dudley in these sentiments, as well as in his reprobation of the practice of bleeding preparatory to the performance of important operations. Loss of blood under such circumstances renders the system more irritable—more susceptible of inflammation, and the restorative powers more feeble. It is true, that Hunter and his followers maintained an opposite doctrine, yet few of the eminent surgeons of Europe, at this time, will differ from him on this point. The justice therefore of the following declaration may well be questioned. "The efficacy," he says, "of blood-letting as a preparatory remedy in subduing the susceptibility to inflammation after operations, is relied upon by some of the most distinguished practitioners of Great Britain." Certainly A. Cooper, Lawrence, Travers, Brodie, and Hall, condemn the practice as warmly as our author.

After discussing the relative value of the several operations proposed for the removal of calculus from the bladder, the author expresses a decided preference for the lateral operation, except in cases of females. He considers "the distressing effects of the lateral operation as frequently experienced in females, consisting in a loss of the retentive power in the neck of the bladder, constitute alone an ample reason, for preferring the high operation in their case." In no other case would he recommend the high operation except where the stone is very large.

It is greatly to be regretted that the author has not minutely detailed every step of his successful operation. He omits even to mention the manner in which incision is made in the perineum—the direction of the cut through the prostate gland—whether the gorget is held horizontally, or whether it is inclined backwards as recommended by Chesselden. All that he states on this important point, is, that he "has become satisfied with the superiority of Cline's gorget, an instrument preferred to any other, and therefore recommended by Mr. Abernethy in his lectures—"that the staff is to be firmly held in a perpendicular attitude by the assistant; care being taken not to incline it either way from the centre to the perineum." He condemns the practice of causing the convexity of the staff to appear prominent in the left side of the perineum.

He remarks, "An opening more central in the perineum secures to a greater extent, the facility of using forceps in the extraction of the stone; and after the patient is placed in bed, there is an advantage in the straight-lined character of the wound from the superfices to the bladder. The neck of the bladder is equidistant from either ischium, and as there is nothing in the anatomy of the parts, which can forbid an incision to correspond with it, there should be no "hesitation about adopting this manner of operating; especially when it is known to offer greater protection to the pudic artery, and also to furnish a more direct opening for the escape of urine, whereby the patient is maintained more secure against the consequence of infiltration."

The gorget he thinks is a safer instrument than the knife, for which he gives the following reasons, which we think unanswerable.

"When a surgeon," he states, "has a piece of anatomy fairly exposed to view, upon which a certain operation is to be performed, the superiority of the scalpel cannot be rationally contested. But when the neck of the bladder and the prostate gland, the parts on which the deeper incision in lithotomy is made, are beyond the sight, nor even accessible to touch, another seems important to the successful execution of the duty of the operator, the case becomes materially changed; and if the bare remoteness from the surface of the prostate gland and neck of the bladder, those portions of the deeper seated anatomy involved in the operation, presented the only difficulty to the lithotomist, then by exactness in the movements of the hand, the gland and the neck of the bladder

might be opened, with some safety and success; but in every subject of the disease that comes upon the table, there is more or less variety in the anatomy of the parts concerned in the operation."

He adds, "the advantages of a *clean cut, with a fine edged scalpel,* are in no respect equal to the estimate made by the advocates of the practice; nor is the bruising even to laceration of the soft parts, by the use of instruments in the extraction of calculi, so much to be feared in its consequences as those are inclined to imagine, who have formed their opinions from injuries done to other parts of the system."

We agree with the author that lacerating a part does not necessarily destroy its restorative power, still it is an accident which should be avoided if possible. It occurs, however, less frequently we presume than is generally supposed. When the prostate is divided, the cellular texture yields and stretches too readily to be easily lacerated. It was the practice of Chesselden to partially divide the prostate gland with a scalpel, and then to introduce the blunt gorget which performed the double office of acting as guide for the forceps, and to stretch the parts. This operation is still performed by Mr. Brodie, of London, who, in his recent work "On diseases of the urinary organs," remarks, "Do not for an instant suppose that this is any rude or violent proceeding. It is far otherwise. The incision of the prostate having begun by the knife, the extension of it by means of the blunt gorget is accomplished with the greatest ease. If you perform the operation on the dead body in the way in which I have described, and dissect the parts afterwards, you will distinguish very readily, the clean, smooth surface made by the cut of the knife, from the fibrous, or striated surface made by the splitting of the gorget. You will ask, why not make such a division of the parts by cutting laterally with the knife? Why prefer the dilatation of the wound by the blunt gorget? My answer is, that the separation of the parts with the latter instrument causes no hæmorrhage, "and that it ceases as it reaches the margin of the prostate, that is, as soon as it reaches the condensed cellular membrane which forms what may be called its capsule."

The forceps and the calculus seem to perform the office of the blunt gorget by splitting up the prostate and stretching the cellular texture. Mr. Brodie seems to entertain this opinion. In his directions with regard to the manner of extracting the stone, he observes that, "you are to draw out the stone gradually, endeavouring to dilate the parts through which it is to pass, instead of tearing them; and it is astonishing to what an extent this gradual dilatation may be accomplished in the hands of a prudent surgeon."

Dr. Dudley bears testimony in favour of this truth, when he states, that "an incision in the neck of the bladder, from one-half to three-fourths of an inch in length, the precise extent being somewhat regulated by the nature of the urethra, and prostate gland, answered for the extraction of calculi, ranging from four to nine, and in one instance eleven inches in circumference." Though laceration, no doubt, sometimes takes place, we doubt its frequent occurrence; the yielding nature of the capsule of the prostate gland, and cellular tissue surrounding it, will generally afford sufficient space for the extraction of the stone without tearing the parts.

The dressing to the wound in the perineum should be of the simplest kind. The introduction of any foreign substance between the lips of the wound, produces more or less irritation, obstructs the flow of urine, causes distension of the bladder, and prevents union by the first intention. It seems, indeed, questionable whether the practice generally followed in this city, and long since recommended by Dr. Physick, of introducing a large gum elastic catheter through the wound into the bladder, answers any of the purposes for which it was intended. This eminent surgeon supposed it would have the effect of preventing infiltration, and would render the patient more comfortable by conduct-

ing the urine to a shallow basin, and thus keep the bed dry. Except in cases where the neck of the bladder has been improperly divided so far as to open the cellular texture around the prostate gland, infiltration rarely, if ever, occurs. In one hundred and thirty-five cases on which Dr. Dudley operated, he does not record a single instance in which this accident happened. But if infiltration were a common occurrence, the catheter would not prevent it, as the urine always escapes in greater or less quantities by the side of it. As then it cannot answer the purpose for which it was designed, and as it certainly retards the cure by preventing union by adhesion, there seems no good reason why the practice should be continued. Eminent surgeons have expressed the belief that the flow of urine over the wound does not act on it injuriously. Our author thinks it proves beneficial, by the "uninterrupted warm bath in which the parts are kept, by the presence and passage of urine, maintains them safe under all circumstances, where the general system has been attended to, and where the violence done is not such as to destroy all power of reaction." The causes of death after the operation of lithotomy arise, says our author, from "hemorrhage, mortification, or sudden sinking in consequence of the shock." The first and last is of rarer occurrence than mortification. When sloughing does supervene, it is certainly produced, for the most part, by infiltration. This accident, however, does not necessarily terminate in death, provided the case is judiciously managed. The practice of Brodie under such circumstances is so rational, and has been attended with such success, that for the benefit of the medical public, I will give an extract from his valuable work.

After describing the symptoms produced by urinal infiltration, such as chills, pain in the part, in the loins, very frequent and sometimes intermittent pulse, tympanitis, hiccough, delirium, &c., he remarks "it is important that you should not fall into the error of regarding such cases as I have just described, as cases of simple peritoneal inflammation; for the remedies which would be useful in the latter case are injurious here. The abstraction of blood, or even the operation of an active purgative, will cause the patient to sink more rapidly, tending only to hasten his death." "The proper course to be pursued is the opposite to that of depletion. The patient should take such nutriment as his stomach is capable of digesting. The bowels may be kept open by injections or some very gentle purgative; and ammonia wine, and brandy, are to be administrated when the state of the general system indicates that stimulants are necessary.

"Under this kind of treatment I have certainly known two children to recover, who were affected in the manner which I have described. In one of the cases to which I allude, an abscess formed in the neighbourhood of the neck of bladder, which burst into the wound, and then the symptoms subsided. In the other a slough separated into the rectum, and fistulous communication remained afterwards between the bowel and the neck of the bladder, but it was of a small size, and productive of no serious inconvenience." The happy termination of these cases led him to the following reflections. "There is suppuration and sloughing of the cellular membrane, around the neck of the bladder, and the constitution is disturbed, as it is in a case of carbuncle; or what is still more analogous as it is in those cases in which there is sloughing of the cellular membrane of the scrotum in consequence of the effusion of urine arising from the rupture of the urethra behind a stricture. And in these cases what is the practice recommended? Do we not divide the soft parts freely over the sloughing cellular membrane; and is not this operation productive of the most signal benefit? Is it possible to resort to any practice corresponding to this, in the cases now under consideration? There is only one way in which this can be accomplished, namely, by laying the sloughing abscess open into the rectum. I made the experiment in one instance and I will tell you the result." Being satisfied from the symptoms that he was suffering from the effects of infiltration, he

states, "I introduced the fore-finger of the left hand into the rectum. I then passed a probe pointed curved bistoury into the wound, and quite to the furthest extremity on the left side of the neck of the bladder. The probe point having been felt through the tunics of the rectum, I pushed it carefully through them, and, drawing it downwards, divided the lower part of the rectum, sphincter and all. Then the wound and the rectum were laid into each other. Little or no hemorrhage followed. The relief was immediate. In five minutes after the operation, the intermissions in the pulse diminished from one in fifteen to one in fifty beats. In an hour it did not intermit at all. During the two following days the patient appeared quite well; the pulse was regular between seventy and eighty in a minute. On the next day there was a slight recurrence of the intermission of the pulse, but it subsided on the exhibition of some brandy and ammonia. After this there was a progressive improvement, and in about a month the wound in the rectum began to contract, and the urine to flow by the natural passage."

Notwithstanding the great success of Dr. Dudley, he does not seem to be very particular in the selection of his cases. "Out of one hundred and forty-five individuals afflicted with the malady who had made application for relief the operation was performed on all except ten." One of these was a gentleman eighty-two years of age, enfeebled by constant hemorrhage from the bladder—another who had pulmonary consumption, and the others so diseased as to be unable to sustain the shock of a severe operation.

Out of one hundred and thirty-five on whom Dr. Dudley operated, "four individuals failed to enjoy its benefits." One died of pleurisy, one of abscess of the kidneys, which existed before the operation was performed; the third died of inflammation of the kidnies—the fourth from disease of the liver. It is doubtful whether he lost one from the effects of the operation; certainly not more than one. He states, indeed, that "no one has ever died in my charge before the bladder was closed, or within the ordinary period required for the healing of the organ."

This success is unparalleled in the history of surgery. We have made researches with the view of establishing this point, and the following are the results.

Frere Come in one hundred cases on which he operated, lost nineteen.

After Chesselden improved his operation he lost two out of fifty-two.

Martineau lost two out of eighty-four.

In the l'Hospital de la Charité, of Paris, from 1719 to 1722, twelve hundred calculous patients were operated on, by different surgeons, of which 255 were lost.

Laucerotte, out of 1629 cases, lost 148.

Dupuytren, out of 356 cases, lost 61.

In Norwich hospital, England, out of 506 cases, lost 70.

At Leeds, out 197 cases, lost 28.

Renzi, out of 389 cases operated on, lost 60.

Souberbeille, out of 56 cases, lost 11.

M. Roux, states, that in Paris the surgeons lose one-sixth of the adults—and one in twenty of the children.

It is difficult to learn the precise results from lithotripsy, in Paris. Civiale states in his report, that of 244 on whom he operated 236 have been cured. This report, however, is said not to be honest; and in a counter report made by Larrey and Double, they assert that he lost 11 in 24. According to his statement he selected there 244 patients, from 429 who had applied to him for relief.

It gives me great pleasure to state, our townsman Dr. Randolph has operated on fifteen calculous patients with Jacobson's instrument, and has not yet lost a patient. This is indeed an enviable commencement, and we hope his future

success, will equal that of our eminent countryman, Dr. Dudley, who has triumphed over all surgeons in the skill which he has manifested in performing the lateral operation. T. H.

ART. XIV. *Anatomical, Pathological and Therapeutic Researches, upon the disease known under the name of Gastro-enteritis, Putrid, Adynamic, Ataxic or Typhoid fever, &c. compared with the most common acute diseases.* By P. Ch. A. Louis, M. D. P. &c. Translated by Henry J. Bowditch, M. D. Boston, 1836: 2 vols. 8vo. pp. 395 and 462.

Some years ago an elaborate review of Dr. Louis' work on typhus fever was published in this Journal. (Vol. IV. p. 403, et seq.) Since that time the reputation of the author has greatly increased, the excellence of his writings has been more generally appreciated, and the work on typhoid fever, which is the most perfect of them, has been extensively read. Still to most of the medical practitioners of America and the British kingdom, it has been a sealed book. It is so full of facts and of close deductions, that it demands vastly more labour of thought than the large majority of works, while it is subject to the additional disadvantage of being written in a foreign language which few thoroughly understand. This has increased the difficulty of the task, and has made a large number of physicians unwilling or unable to undertake it.

A work which cannot be read without unusual attention is always most difficult to translate. He who would undertake it must be entirely familiar with the language, must have studied the work most thoroughly, and if possible should be personally acquainted with the author and his method of teaching. Dr. Bowditch possesses all these requisites, and to them he has added an intense love for truth and a personal attachment to Dr. Louis, which increased his desire of giving the profession in America a faithful translation of one of the most valuable works on medicine that has appeared for some years. Every page of the translation proves that he has examined most scrupulously those words or sentences which might have been erroneously translated, from their analogy with English expressions of different meaning. Where the French words were without an exact synonyme in the English language he has either indicated the word which corresponded most nearly with the original, or he has given both the original and the best English translation.

The language of the translation is much better than is usual in works of this kind, and less strongly tinctured with those French idioms which disfigure most of our translations. Still it was not possible to avoid some expressions which are scarcely English. This difficulty arises in great part from the greater zeal displayed by the French in the cultivation of pathological anatomy. This pursuit has obliged them to adopt many new words which become necessary in expressing the same ideas in the English language. All that a translator can do is to confine his language as strictly as possible to his native idiom, but when he is forced to depart from it we should not be hypercritical.

This notice is designed to introduce the excellent translation of Dr. Bowditch to our readers. It is not our intention to review the original work, but we cannot let so favourable an opportunity pass without recalling to the minds of our readers a few of the most important facts observed by Dr. Louis. The work on typhoid fever, relates to that slow, protracted form of disease known under the term typhus mitior or nervous fever, or by the modern appellation of dothinenteritis. Dr. Louis observed the symptoms, pathological phenomena and other facts presented by the patients admitted into two wards of La Charité during a period of six or seven years. After analyzing the symptoms of all the cases of

acute diseases, he selected typhoid fever as the basis, described it with great accuracy and then compared the phenomena presented by this disease with those peculiar to other acute affections. By this method of investigation the reader enjoys the advantage of studying the history of all acute diseases in a single work of the most condensed form, at the same time that he can thoroughly learn the characteristic symptoms of the principal malady.

But those who will read this translation of Dr. Louis's work must remember that it must be carefully and laboriously studied, it cannot be carelessly read. It is too full of facts and written in too concise a style for superficial examination, and he who would dismiss it hastily may be assured that he will often totally mistake the strict meaning of the author.

Some confusion will arise in the minds of many readers from the title of the work. Dr. Louis merely gives the numerous designations applied to one disease in order to show that he is indifferent or nearly indifferent to the name. But we must carefully distinguish the nervous fever or typhus mitior of the French from the typhus fever of the English writers. The two diseases differ materially, and though readily distinguished in well defined cases are often confounded with each other. For a more complete account of the distinction between them, we may take the liberty of referring the reader to the American Journal for February 1837.

Dr. Bowditch has published in the appendix to the first volume some interesting observations on the mucous membranes of the alimentary canal. We hope he will continue his inquiries, which will probably lead to interesting results. His observations fully confirm the opinion of Dr. Carswell which refers the softening of the great tuberosity of the stomach to the action of the acid contents of this organ upon its coats. W. W. G.

ART. XV. *A Treatise on the Functional and Organic Diseases of the Uterus.* From the French of F. DUPARCQUE, Docteur en Medecine de la Facultés et ancien interne des Hôpitaux et Hospices Civil de Paris, &c. Translated, with notes, by JOSEPH WARRINGTON, M. D. Philadelphia: Desilver, Thomas & Co., 1837. 8vo. pp. 455.

The work of Dr. Duparcque, like most modern French monographs, is highly elaborate; we may add, not entirely exempt from the great faults of French writers, unnecessary extension, tedious detail, and long and useless illustrations. That it possesses, however, great merit, may be inferred from the fact that it obtained the prize proposed by the Medical Society of Bordeaux for the best treatise on the subjects which it embraces.

It is divided into *two parts*. The first contains a general pathological view of the organic diseases of the uterus, their causes, mode of formation, developement, termination, and the means of discovering them.

After a brief notice of the physiological action of the uterus, the author enters into a consideration of the various causes of common occurrence which interrupt its proper physiological actions and otherwise produce an abnormal condition. His remarks appear in the main to be just, and many of them original. The various points advanced in these discussions are illustrated by well described cases.

The *second part* is on particular organic alterations of the uterus, as simple engorgement, sanguine engorgement or congestion, hard engorgement, scirrhous inflammation, simple ulceration, and confirmed cancer. All these conditions are described, and their causes, mode of formation and terminations, properly explained. According to the observations of the author they may

follow each other consecutively; and hence he insists, with proper emphasis, on the importance of removing the first manifestations of disease, and of avoiding the various exciting causes of congestion and inflammation as the only sure method of avoiding cancer: or, in other words, he maintains that cancers very commonly result from the neglect of proper remedial means while in their simple or primary state. Like the first part of the work, the second is also enriched with numerous cases illustrative of the views of the author.

Of the *translation* we have little to say. The task of translating the *ideas* of an author into a different language from that in which they are written, is always laborious, and often profitless to him who undertakes it; and hence we feel grateful to those who furnish us with a valuable foreign author in an English dress. In the present instance, the meaning of the author, generally speaking, is rendered with tolerable clearness. That the translation abounds too much in Gallicisms, is undeniable. Sometimes, indeed, it is too literal to be altogether intelligible. These, perhaps, are the unavoidable errors of a young writer in his first essay. But errors in grammar ought undoubtedly to be guarded against, such as the use of the relative *which* instead of *who*, when applied to persons; *became* for *become*, and the *substantive* form of the noun in place of the *adjective* derived from it, as *scirrhus* for *scirrhous*, and vice versa. The table of "*Errata*," which contains *two* examples, might have been very profitably extended from the typographical errors which occur throughout the work. As the book, however, is a truly valuable one, we hope it will soon reach a second edition, in which, no doubt, the translator will be careful to correct the errors to which we have adverted. R. M. H.

ART. XVI. *Mémoire sur les rapports des sexes dans les naissances de l'espèce humaine;* Par Ch. GIROU DE BUZAREINGUES, Correspondant de l' Académie royale des sciences. Paris, 1836.

Memoir on the proportion of the sexes at birth in the human species. By Ch. Girou de Buzareingues, &c. &c. Paris, 1836.

In the year 1828, the author of the memoir above mentioned, read before the Royal Academy of Sciences of France an essay upon Generation, in which he set forth the following views in relation to the difference in the proportions of the sexes at birth in the human species.

The male sex is the result of the predominance of the motive power (*force motrice*) of the animal economy. In France, the variations in the proportions of the sexes at birth, maintain a relation with the proportion of ease to labour,—abundance to want,—refinement to rusticity,—manufacturing pursuits or of those which chiefly call for the exertion of the intellectual faculties to rural occupations or to those which demand the exertion of physical force,—libertine and dissolute manners to those of strictness and austerity,—the influence exerted by city life compared with that of the country, or, in a word, of the sensitive to the physical power.

In the treatise upon Generation, from which these conclusions are drawn, the author specially designates the influences exerted by the relative conditions of the parents as to age, health, temperament and strength, both physical and moral, together with various other considerations connected with the employments of industry, as influencing one or the other sex.

In his subsequent publications upon the same subjects, the author has substituted for the expression sensitive force or power, used in opposition to motive power, the term nutritive power, as more particularly characterizing the female sex. In the present memoir which was communicated to the Royal

Academy of Sciences, he considers himself authorized to deduce the following conclusions as the result of laborious investigation.

"Every thing which tends to increase the muscular power of one sex, and particularly that of the male, but more especially that of both sexes, favours the procreation of males. Every thing on the contrary, which tends to lessen the muscular power, favours the procreation of females."

"Whatever tends to increase exclusively either the motive or nutritive power in one or the other sex, reduces the relative influence of the other force in the other sex."

"Every kind of power is increased by gradual, moderate, and prolonged exertion, and becomes exhausted by excess. Thus, institutions which maintain a discipline similar to that of the ancient Roman armies, tend to develope the muscular energies of a people, and secondarily also contribute to increase the relative number of male births; whilst, on the contrary, habits which serve to enervate the muscular strength render the lymph predominant over the venous blood, or the cellular tissue over the fibrous, and determine to the relative increase of female births."

For the support of his positions, the author lays down certain rules which have to be borne in mind by those concerned in the investigation of the subject. Among these are the following:—

No deduction should be drawn, in regard to a cause tending to the procreation of one sex, before ascertaining whether it is not associated with causes favouring the procreation of the other sex; for the capabilities of the father may be neutralized by those of the mother, and even in the same individual, the opposition of causes may prevent or diminish the effects.

The actual condition of a nation should not be judged of by its former state, since the conditions not only of individuals but of nations, alter with the age. During the increasing prosperity of a nation, the relative proportion of the sexes may not be the same as in the period of its decreasing prosperity.

The activity of industry is determined by the wants; but it frequently happens that the products exceed the wants, and then industry reposes to be roused again in turn.

In this alternation, the number and precocity of the marriages, and the proportions of the two vital powers do not remain constant.

The amount of labour performed in a state, must not be estimated from that of some one of its provinces.

If there be places where the manufacturing industry exacts a larger amount of the physical power than the rural employments, it should also exert a greater influence upon the procreation of the male sex.

The author is sustained in his general conclusions, so far as France is concerned, by the facts, that in those departments which contain the largest cities, the relative proportions of girls at birth rises above the general average for the whole nation, both in the legitimate and illegitimate births. This result exhibits itself conspicuously in Paris, especially in those quarters in which wealth most invites to repose. The following statements, made from official reports, of all the births during ten or twelve years, shows the influences manifested in some of the principal cities of France. The term placed on the right, exhibits the proportion of female births corresponding to 1000 males. It must be observed that the excess of males over the females at birth throughout the whole kingdom, is as 1000 of the former to 938 of the latter, the difference amounting to about 6.6 per cent.

In Lyons, the births from 1823 to 1832, were in the proportion of	Males	24,586	978
	Females	24,050	
Marseilles, from 1820 to 1832, (12 years,)	Males	27,278	962
	Females	26,262	
Bordeaux, from 1820 to 1832, (12 years,)	Males	21,827	977
	Girls	21,294	

Rouen, from 1820 to 1833, (13 years,)	Males	21,484	960
	Girls	20,627	
Nantes, from 1820 to 1832, (12 years,)	Males	14,371	953
	Females	13,700	
Lille, from 1823, 24, 26, to 32, (9 years,)	Males	11,439	978
	Females	11,086	
Montpellier, from 1822 to 1833, (11 years,)	Males	7,095	832
	Females	6,835	

The proportion estimated for Paris is 967 females to 1000 males.

The author has given the following results obtained by him from authentic documents, relating to the proportions of the sexes at birth in other parts of Europe.

At Strasbourg the proportion of females is 978 to 1000 males.

Orleans (in 1826), the female births were as 1058 to 1000 males.

Moulins, from 1823 to 1827 990 " "

Department du Nord, in 1827, 937, in 1829, 939.

Metz, from 1700 to 1810, 110 years, 961.

In Paris, from 1745 to 1788, inclusive, the proportion among the legitimate births was 960, and of the illegitimate 972; from 1789 to 1805, both the legitimate and illegitimate 956; from 1806 to 1816, legitimate 958, natural 975; from 1817 to 1827, legitimate 964, illegitimate 967. The proportion of female births was less during the republic than before or since.

At Geneva, in the years 10, 11, and 12 of the republic, 999.

In the Department of Leman during the same period, 921.

In Florence, from 1451 to 1550, (100 years,) 950; from 1551 to 1650, 962; from 1651 to 1750, 966; from 1751 to 1800, (60 years) 988; for the 360 years, 965.

City of Genoa, 1806, 7, 8, 10, 11,—953.

Department of Genoa during the same period, 915.

Department of Pô, from the year 12 to 1813 (10 years,) 928. In this department the rural predominates greatly over the manufacturing industry.

Naples, in 1824, 976. In 1826, 979.

Kingdom of the two Sicilies from 1821 to 1828, 8 years, 942.

Rome, in 1823, 980; in 1824, 977; 1828, 902. From Easter in 1829 to Easter in 1830, 10005.

At Leghorn, from 1818 to 1824, (7 years,) 971.

Plaisance, in 1823, 1045.

Vicenza, in 1820, 978.

Milan, in 1828, 959. In the other communes of the province of Milan in the same year, 908.

In the whole of Lombardy during the same year, 929.*

Barcelona, in 1821, 962.

Patriarchate of Lisbon, in 1801, 959.

Bishopric of Oporto, in 1801, 974.

Province of Minho, in which Oporto is situated, and in which the rich valley of Minho is highly cultivated, in 1801, 902.

Province of Alemtejo, of which only 2-9ths are cultivated annually, and only 1-9th in wheat, in 1801, 978.

Kingdom of Portugal, in 1801, 956.

London, in 1826, 28, and 30, 996.

* With the exception of Russia, there is no part of Europe where the male sex predominates so much at birth over the females, as in Lombardy and Denmark. Nor are there any states in which the rural employments predominate so much over the manufacturing industry. The proportions of the sexes are, for the communes of the province of Milan, 908; Denmark, 910; Russia 906 to 918.

Great Britain, 1801, 11, and 21, 954.
Sweden, 956.
St. Petersburg, in 1828, 994; in 1832, 956.
Moscow, in 1824, 948.
Russia, in 1812 to 1822, (10 years,) 906; in 1827, 898, according to M. Ferussac; from 1812 to 1827, and 1829, 918, according to M. Bickers. Whilst Russia thus presents the maximum proportion of males to females, Sweden offers the minimum. The author has pointed out the different conditions of the inhabitants of these countries, which conspire to create the disparity.
Vienna, from 1801 to 1829, 964.
Inspruck, in 1827, 1000.
City and territory of Trieste, in 1825, 1014.
Austrian dominions, from 1787 to 1791, (4 years, incomplete,) 942.
Berlin, in 1827, 950.
Kingdom of the low countries, from 1815 to 1828, in the cities 948; country, 939.
Kingdom of Prussia, from 1820 to 1827 (8 years,) 944.
Cologne with Dentz, in 1827, 1021. Government of Cologne and Dentz, in 1827, 963. In the last mentioned government the rural population bears the smallest proportion to that of the cities of any other portion of the Prussian monarchy.
Kingdom of Denmark, in 1828, 910. City of Copenhagen, 937.
Munich, 1828, 29, 971.
Hamburgh, 1822, 1020.
Stuttgard, from 1815 to 1828, (14 years,) 1000.
Kingdom of Wurtemburg, from 1820 to 1828, (9 years,) 946.
Cape of Good Hope, from 1812 to 1820, (9 years,) among the christians 1026; slaves, 959, according to M. Ferussac.*

It is a singular fact that in the illegitimate births the predominance of the males is in a much less proportion than with the illegitimate births.

The Annuaire for 1833 gives the results of observations made upon more than thirteen millions and a half of births in France, (from 1817 to 1830,) of which 6,981,902 were boys, and 6,563,567 girls. The relative proportions of the sexes at birth thus stand as 17 males to 16 females.

When, however, the natural births are taken separately, the proportion of the sexes is changed. Thus, during the period of 14 years just mentioned, the illegitimate births amounted to 487,021 boys, and 466,119 girls, which makes the predominance of the males considerably less, or as 23 males to 22 females.

Another striking fact grows out of the separate observation of the illegitimate births; namely, that those which take place in the lying-in hospitals present a much larger proportion of males than those of the births occurring at private residences. The memoir under consideration states the proportion of the sexes in natural births occurring between 1817 and 1826, inclusive, to be as 1000 males to 957 females in the hospitals, and as 1000 males to 977 females at private residences. This result is supported by the official returns made by all the principal towns in France. Our author informs us that the observation holds good not only when the sum total of many years are included, but in the

* In the United States, the only estimates yet made which present on a large scale the relative proportions of the sexes at birth, are reported in this Journal for Nov. 1831, article Medical Statistics. From this we find that the births in Philadelphia for 10 years, show a predominance rather exceeding 7 per cent. In the new states, the excess of males at birth is still greater. In Alabama, Illinois, Missouri, Mississippi, and Indiana, all of which are but lately settled, the boys of 10 years of age exceed the girls of the same age as 100 to 92. Now, as under that age the deaths of males always much exceed those of females, the predominance of the males at birth, must exceed that exhibited at the 10th year.

estimate for each particular year, in Paris and all the large cities, as may be seen from the following returns of natural births:

In Paris, in 1827, births at residences, 986; in hospitals, 938.

1828,	do.	979;	do.	940.
1829,	do.	945;	do.	917.
1830,	do.	982;	do.	944.
1831,	do.	939;	do.	928.

Lyons, from 1823 to 1832, (9 years,) at residences, 1019; in hospitals, 944.

Marseilles, from 1820 to 1832, (12 years,) at residences, 991; in hospitals, 891.

Rouen, from 1820 to 1833, (13 years,) at residences, 984; in hospitals, 903.

Nantes, from 1820 to 1832, (12 years,) at residences, 1016; in hospitals, 824.

It is not a little curious to find that among the legitimate births the results last considered are reversed; namely, the births at private residences exhibit a larger relative proportion of males than those in the hospitals. This fact is strikingly presented in the following statements of legitimate births:

At Paris, in 1827, at home, 983; in hospitals, 1164.

1828,	do.	956;	do.	996.
1829,	do.	952;	do.	1004.
1830,	do.	978;	do.	985.
1831,	do.	960;	do.	1084.
1832,	do.	943;	do.	745.

Lyons, from 1823 to 1832, (9 years,) at residences, 959; in hospitals, 1062.

Marseilles, from 1820 to 1832, (12 years,) at residences, 958; in hospitals, 980.

Rouen, from 1820 to 1833, (13 years,) at residences, 960; in hospitals, 972.

Nantes, from 1820 to 1832, (12 years,) at residences, 946; in hospitals, 949.

Our author attempts to explain the curious facts last mentioned, by observing that the mothers of the illegitimate children born in hospitals, come for the most part from the country, whilst those who lye-in at their homes, appertain almost exclusively to the native city population, to which also belong the mothers of the legitimate children who lye-in at the hospitals, the indigence of whom may perhaps be referred to intemperance or idleness, causes tending to increase the procreation of females.

Our author's conclusions have in many instances been called in question; but he has exhibited much ingenuity in their defence, and generally succeeded in designating the modifying causes which occasionally interfere to alter general results and create exceptions and incongruities. In his concluding remarks he recapitulates his doctrine, in doing which he states that anatomy and physiology teach us, that the fibrous tissue predominates in the male, and the cellular in the female; that the blood which is the vehicle of fibrin, prevails in the male organs of reproduction, and the lymph in those of the female, &c.

He observes that numerous observations made upon domestic animals, and the human species, have proved to him that all the circumstances which render the muscular powers predominant during the intercourse of the sexes, are followed by a predominance of males in the offspring; whilst on the contrary, all those under which this force languishes, are followed by an opposite result. Statistical documents embracing more than 80 millions of births attest, that under the influences of laborious employments, the number of male births increase, whilst under the influence of ease and luxury the proportion of males is diminished.

G. E.

ART. XVII. *Das der Gebrauch innerer Reizmettel zur Beforderung der Geburt des Kindes unnöthig, fruchtlos und gesunden Frauen Sogar Schadlich Sei; nachgewiesen.* Von Dr. JOHANN CHRISTIAN GOTTFRIED JÖRG, Konigl. Sachs. Hofrathe; Ordentlichen Professor der Geburtshülfe au der Universitat zu Leipzig, &c. &c. 8vo. pp. 86. Zeitz, 1833.

That the Administration of Internal Stimulants, with the View of hastening the Delivery of the Child, is unnecessary, useless, and in the healthy female, injurious. Demonstrated by Dr. JOHANN CHRIST. GOTTF. JÖRG, Professor of Midwifery in the University of Leipzig, &c. &c.

This small brochure was addressed to Professor Kühn of Leipzig, on the occasion of the celebration of his jubilee, in 1833—an honour, which it is the custom, in Germany, to extend to distinguished medical men, when they have spent fifty years in the practice of their profession. The title of the work sufficiently expresses its range, and Dr. Jörg has handled the subjects embraced in it, with an ability clearly indicative of profound judgment, and extensive experience in his profession. There are one or two of his conclusions in which we do not concur; yet we must do him the justice to say, that he has shown in strong colours the impropriety and mischief of a very common practice. Accoucheurs are too much in the habit of resorting to the internal administration of stimulating remedies, with the object of hastening labour.

Whether this practice is the offspring of a distrust in the powers of nature, or a culpable impatience of the delay sometimes encountered in the parturient process, its consequences, there is too much reason to fear, are often destructive both to mother and child.

Professor Jörg has treated his subject in three chapters. In the first he attempts to prove, that the natural parturient powers, when they pursue their regular course, require no assistance from internal remedies. In the second he demonstrates, that it is impossible to aid or accelerate the natural delivery of the child, by the administration of remedies which are harmless. And in the third he endeavours to show that it is hazardous to administer stimulating articles during the course of a natural labour.

We have neither space nor inclination to follow the author through all his arguments upon these questions; but shall confine ourselves to a few passing remarks in relation to some of the articles usually employed for the purpose under consideration. These he divides into three classes: 1. General stimulants affecting the whole vascular system. 2. Medicines influencing the uterus through the urinary organs; and 3. Such as act upon the alimentary canal, and have the impression excited by them communicated to the uterine system.

We do not deem it necessary to enumerate the several articles arranged under these respective heads. Upon the subject of ergot, however, the author has entered upon some details, which it may be interesting to notice, especially as the powers of the article are still very differently estimated, and as Dr. Jörg is amongst those who do not believe that it operates specifically upon the uterus.

With the view of testing the virtues of ergot, Jörg, and several students under his observation, made numerous experiments upon themselves. They took from a scruple to two drachms in powder, at eight o'clock in the morning, after a light breakfast of coffee and bread and butter. In small doses it produced no sensible effect; but when two drachms were taken, they experienced a sense of fulness and weight about the stomach, nausea, tenderness, an inclination to vomit, and a general feeling of disgust, which did not subside until about two o'clock. In no individual of the experimenters was actual vomiting induced. The article was also used in decoction and infusion. In these forms it was found to be highly unpleasant to the stomach, and could not be repeated in

large doses, for any length of time, without irritating the bowels, producing loss of appetite, and general impairment of the digestive function.

Four persons of from 21 to 30 years of age, took each two full cups of an infusion of an ounce of ergot, in a pound and a quarter of water, after a light breakfast of coffee: no perceptible effect was produced. On the 28th of July, six persons took, each, three cups of an infusion of two ounces of ergot in two pounds of boiling water. Of this number, three experienced in two hours, increased heat in the abdomen, especially about the stomach, tenderness of the epigastric region, nausea, and an inclination to vomit. These feelings subsided in a short time, and all three individuals dined with a good appetite. In the other three, the only impression produced was, a feeling of warmth and irritation about the stomach.

On the 4th of August five individuals took, each, two drachms of pounded ergot, sprinkled on bread and butter. In an hour one experienced considerable painful irritation in the region of the stomach, some affection of the head, a feeling of faintness, slight cerebral congestion, increased heat, and redness of the eyes. These symptoms were shortly followed by an evacuation from the bowels, and some time afterwards, by dryness of the palate and fever, periodical pain of the abdomen and repeated irritation. At twelve o'clock he experienced slight nausea, a free secretion of ropy saliva, increasing disposition to vomit, flatulency, and half an hour later, considerable borborygmus, increased pain of the bowels, continued nausea and disturbance of the head. At 1 o'clock a watery discharge took place from the rectum, attended with some griping; and at 2 o'clock, after partaking of dinner, all the symptoms, except some thirst, and occasional pains of the bowels, subsided.

In the second individual, the first effect of the article was to excite a sense of heat in the stomach, dryness of the mouth, increased secretion of saliva, repeated eructations, and slight nausea. This condition continued until 11 o'clock, when slight vomiting took place, and at half-past eleven the remains of all that had been swallowed were ejected, together with considerable mucus—the nausea then abated, but the eructations and the flow of saliva continued until the afternoon. Anorexia, a sense of dejection, and weakness of the limbs were experienced throughout the remainder of the day.

The third, an hour after swallowing the ergot, complained of some sickness and oppression, the secretion of saliva was increased, and, in a short time, he experienced pain of the bowels and head. The symptoms, however, were mitigated by the horizontal posture in bed, by taking some coffee, and by a walk in the open air. The pain and sickness, nevertheless, continued with considerable intensity until 2 o'clock, and did not subside until after dinner, which was taken without appetite. About 8 o'clock, a watery discharge took place from the bowels, which was followed by the disappearance of all the uneasiness.

The fourth individual felt, half an hour after he had swallowed the ergot, as though he had not taken food for several days. By 11 o'clock the feeling of hunger was so urgent, that food was taken with a relish. In a quarter of an hour afterwards, nausea came on, with increased salivary secretion, pain of the abdomen, and, shortly, vomiting, which recurred in five minutes, attended merely with the discharge of mucus, the sickness and pain of the abdomen continued until five in the evening, at which period a smart chill took place, followed by profuse perspiration. After this all the unpleasant sensations subsided.

In the fifth individual, a sense of heat about the stomach, pain of the abdomen, increased heat of the skin, flushing of the face, and frequency of the pulse took place at 10 o'clock. At half past ten there was heaviness and pain of the head, with a sense of dryness and burning in the mouth and throat. In half an hour these symptoms were followed by a copious flow of saliva, and in half an hour the individual felt an increase of pain in the abdomen, loathing of food, and at

11 an inclination to vomit. The pain of the bowels became so intense, that it was difficult to maintain the upright posture and it was necessary to remain drawn up in bed. The inclination to vomit recurred almost constantly, but emesis did not take place until it was mechanically induced by irritating the fauces. From 11 to 12 the discomfort of the experimenter was almost insupportable; but after that period, a rumbling of the bowels took place, followed by the discharge of considerable flatus, and a liquid offensive stool, subsequent to which considerable relief was experienced. At 3 o'clock a cup of coffee removed the remains of the nausea, and by evening all the unpleasant feelings had subsided.

On the 11th of August, four individuals took each a drachm of ergot sprinkled on bread and butter, a fifth took two drachms. The same symptoms nearly, were developed as in the preceding instances.

Professor Jörg also reports several experiments made with this article on dogs, cats, horses, cocks, and pigeons, showing that in large doses it occasions death, which was preceded by evidences of considerable pain, and by convulsions. A drachm and a half, repeated for several days, was found sufficient to kill pigeons, and also a common rooster. A young cat was destroyed by two drachms, repeated in the same way; a dog by an ounce and a half, and a second dog by an ounce.

From these results our author concludes that ergot is incapable of exercising any direct influence upon the uterus, and when the contractions of this organ are excited by its administration, it is in consequence of the decided impression it makes upon the alimentary canal, and especially its tendency to excite vomiting, which, when induced by any of the ordinary emetics, is liable to excite contractions of the uterine fibres. In reference to emetics our author remarks, that in cases of threatened abortion or miscarriage, he has found small doses of ipecacuanha, given so as to excite slight nausea, but never to the extent of inducing vomiting, one of the most effectual means of suspending uterine contraction, and thereby saving the ovum.

In regard to our author's opinion of the powers of ergot we can only say, that our own experience has led us to estimate them very differently. We feel convinced, that we have seen, in several instances, positive evidence of its property of acting directly upon the uterine fibre, and we are inclined to suspect that those who have failed to realise this effect, have used an inferior article. As, however, there are still many who are sceptical on the subject, further observations are necessary to decide the question. E. G.

ART. XVIII. *An Essay on the Origin and Nature of Tuberculous and Cancerous diseases. Read to the Medical Section of the British Association, on the 23d of August,* 1836. By RICHARD CARMICHAEL, M. R. I. A., &c. Dublin, 1831, pp. 56.

This is a most interesting question, and one, the solution of which, may lead to important practical results. But whether the treatise before us is written in such a spirit as to facilitate the removal of the obscurity still hanging over the origin of tubercles, it seems to us, at least, to be doubtful. The question could only be resolved in a satisfactory manner by the most minute researches into the pathological anatomy of tubercles, and we are obliged to admit that the opinion of our author differs widely from that of the most accurate modern pathologists.

Mr. Carmichael returns to the opinion formerly broached, that tubercles are beings possessing a vitality independent of the animal in which they are lodged, except so far as that that animal affords them; 1st, the organic particles of which they are formed; and 2nd, the nutriment which they imbibe by their own innate

powers, and thus they form the last link in the chain of the last class of animals, the entozoa.

The author is evidently not very familiar with all the appearances of tuberculous disease, for although he quotes Laennec, Carswell, and other pathologists, he draws his inferences almost exclusively from one form of tubercle; the rounded isolated tubercle, which is certainly the most frequent, but not the only variety of this morbid product. Now although the rounded granulations and tubercles found in the lungs and still more distinctly observed in the serous membranes, do certainly present many analogies of form and mode of developement with some of the lower classes of parasitic animals, we must inquire into the history of other forms of tuberculous matter. A minute study of the pathological anatomy of tubercles will then show (as we have verified in some hundred examinations) that in children, the most common form of tubercle is the infiltration of the tissue of an organ with the tuberculous matter. After a time it becomes an irregular amorphous mass of the usual opaque yellow colour. We have examined the same matter in adults, and in them also we have watched the gradual progress of a lung or of a lymphatic gland from the first stage, in which it is still soft, though filled with a semi-concrete transparent or yellowish fluid, infiltrating its whole structure as water does a sponge. In a more advanced degree the tissue of the lung is obliterated, and a tuberculous mass remains. Now, we certainly do no more admit the distinct vitality of this form of tubercle than we do that of the serous liquid of dropsy.

Scrofula is not of a tuberculous character, according to Mr. Carmichael. He uses the term in too wide a signification. The writers who contend for the identity of tubercle and scrofula, allude only to those cases of chronic alterations of the glands or other tissues, in which distinct tuberculous substance can be detected. But the term scrofula is frequently applied to other alterations of a much less decided character.

Cancer is supposed, and we believe with reason, by Dr. Carmichael, to be closely connected with tubercle. But what is that connexion? Ingenious as the essay certainly is, we fear that this question is left in the same doubt as that relative to the origin of tuberculous disease. W. W. G.

ART. XIX. *De Blepharoplastice. Dissertatio Inauguralis, Medico-Chirurgica.* Auctor JOANNES STAUB. 8vo. pp. 100. Berlin, 1835.

De Blepharoplastice, that is to say, according to the etymology of the term, (from βλεφαρον, eyelid, and πλαστικη, formation); a dissertation on the formation of eyelids; not their physiological organization, but rather the remedying of their original and accidental defects by the skill of the surgeon. The satire of Butler has rendered almost every one aware of the operation first proposed by the Italian physician Tagliacozzi, and now, with certain modification actually pursued, for the restoration of deficient and dilapidated noses, and denominated by writers rhinoplastice. Although we are not aware that any surgeon has actually succeeded in supplying, by a similar operation, either a congenital absence or accidental loss of the eyelids, yet there are sufficient facts upon record to show that very extensive deformities of these organs, arising from numerous causes, may be effectually remedied by the knife, and the serious injury which the eye itself would eventually have sustained, had they been allowed to remain, prevented. Besides other deformities to which the eyelids are occasionally subject, it not unfrequently happens that they adhere to each other from birth, or become subsequently agglutinated from injuries or disease, thus preventing the eyes from being unclosed, or they may adhere to a greater or less extent to the ball of the eye; both eversion and inversion of the lids or of their tarsi are also of common occurrence, and even, though less frequently, the lids may be so de-

ficient in length as not to cover completely the ball of the eye, or finally, they may be either entirely wanting or destroyed. Now, as already hinted, in all such cases the surgeon has it in his power by appropriate, and often very simple operations, to remove entirely, or to a very considerable extent, the existing deformity, and thus to guard the organ of vision against its deleterious consequence—even to preserve the sight itself. It is of these operations that the author of the dissertation before us treats under the denomination of Blepharoplastice.

The work is divided into eight sections, devoted respectively to the operations for

1st. Colombonia, or a preternatural longitudinal division of the eyelids.
2nd. Ankyloblepharon, or abnormal adhesion of the lids to each other.
3d. Symblepharon, or abnormal adhesion of the lids to the ball of the eye.
4th. Trichiasis, or inversion of the eyelashes.
5th. Organic Entropium, or inversion of the lids.
6th. Organic Ectropium, or eversion of the lids.
7th. Lagopthalmia, or defect in the length of the eyelids; and,
8th. Deficiency of the eyelids.

Under each of these sections the operations recommended and pursued by the most distinguished surgeons and occulists, are minutely and very accurately described; as, however, the author presents nothing new or peculiarly interesting in relation to either of these, a more extended notice of his dissertation is not considered necessary. From any of the standard treatises upon operative surgery, all the practical information it comprises may be readily obtained.

D. F. C.

Art. XX. *De Septi Narium Restitutione. Dissertatio Medico-Chirurgica.* Auctor Carolus Tax. Berlin, 1836: pp. 43, 4to.

A Medico-Chirurgical Dissertation on the restoration of the Septum Narium. By Charles Tax.

The principal object of the author in the present dissertation is to describe the various surgical operations, with their rationale, which have been proposed by different distinguished surgeons for the restoration of the septum between the nostrils, when this has been destroyed by accident or disease.

The more recent authorities cited in favour of the operation here described are Carpue, Dieffenback, Graefe, Blassus, Rust, Fricke and Labat. The remarks of other surgeons of eminence in regard to them are, however, occasionally referred to.

The dissertation is divided into nineteen sections. The first ten are occupied with an account of the manner of forming the septum narium, when the whole of the nose is to be restored, by a surgical operation, according to the methods pursued in India, in Italy, and in Germany. The eleventh to the nineteenth section inclusive, treat of the manner of restoring the septum narium when it alone has been destroyed: 1st, from the skin of the forehead; 2ndly, from the skin covering the nose itself; 3dly, from the superior lip; 4thly, from the skin of the lip and cheek; 5thly, when a hare-lip exists; and 6thly, from the skin of the palm of the hand.

It is not of course expected that we should, in the present notice of the work of M. Tax, attempt to give to our readers the details of these several operations and the remarks of the author in relation to them respectively. The principles upon which the whole of them are founded, as well as their general outlines, are well understood by every intelligent surgeon. To render in any degree intelligible an account of the proper manner of performing each, and to explain the particular cases to which it is adapted, would render it necessary for us to translate nearly the whole of the dissertation before us.

D. F. C.

ART. XXI. *Illustrations of Pulmonary Consumption, its anatomical characters, causes, symptoms, and treatment, to which are added some remarks on the climate of the United States, the West Indies, &c., with thirteen plates drawn and coloured from nature.* Second Edition. By SAMUEL GEORGE MORTON, M. D., late Physician to the Almshouse Infirmary. Philadelphia, 1837.—pp. 349. 8vo.

The rapid sale of the first edition of this work, which appeared three years since, proves the estimation in which it was held by the profession, and its success has induced the author to publish a second edition. We mention this fact with the more pleasure, on account of its rarity and the strong proof it affords of the sterling excellence of the work. That a work intended for the public, or as a text book for large classes of students, should pass quickly to a second edition, is not uncommon. But that a monograph devoted to those details of pathology which interest the scientific physician, but are scarcely appreciated by the student, should be so extensively read, must be highly gratifying to the author. Nor are there many books more instructive to the practitioner remote from the usual sources of medical knowledge.

We shall quote the words of the author to show what changes have been made in this second edition. "The whole work has been re-written and the quantity of matter (exclusive of the numbered cases which remain nearly as before) is considerably more than double. Within the period above mentioned I have also enjoyed the advantage of personal observation of the climate of some of the West India islands. The result of my inquiries on this head are recorded in the following pages, and will be found, I trust, to embrace some useful information."

The first edition having been reviewed at some length in a preceding number of this Journal, (Feb. 1834,) and an analysis given of its contents, we shall now notice those parts merely which are of recent addition.

Dr. Morton has very judiciously incorporated into his work the observations of Dr. Lombard of Geneva, relative to the influence of particular professions and modes of life on the developement of tubercles. These results confirm the commonly received notions that sedentary occupations and a constrained posture which impedes the flow of blood through the lungs and heart, favour the growth of tubercles in those persons who are already predisposed to the disease, and give rise to this predisposition in persons of a previously healthy constitution. As to the exciting causes, there is more diversity of opinion. Dr. Morton considers bronchitis and pneumonia as not very infrequent causes of consumption, while simple pleurisy is considered by him as the result, not the cause of tubercles. Now, we have certainly seen not a few cases of consumption in which bronchitis, pneumonia, and pleurisy, acted as exciting causes, or at least were the initial points from which the patients dated the beginning of their symptoms. In those cases, extreme care was taken in verifying the statement of the patient by repeated inquiry, and we are very sure that no disturbance of the health had previously existed in a sufficient degree to attract the attention of the patients, or to prevent them from following their usual occupations.

Such cases do not, however, invalidate the general rule, that pulmonary consumption in the large majority of patients begins gradually, and as it were, imperceptibly. The patient is not at first attentive to his own sensations, and is awakened to a knowledge of his danger, only when a secondary inflammation supervenes and disables him from pursuing his ordinary vocations. We believe, then, that phthisis is, in the large majority of patients, a strictly constitutional disease, but that ordinary inflammation of any of the pulmonary tissues may excite the developement of tubercles in certain individuals. But we are

not sure whether the local inflammations produce this result, because they are seated in the lungs, or whether they merely act by debilitating the general health, and by keeping up a long continued febrile excitement. It is in this latter way that typhoid fever is so frequent an exciting cause of tuberculous consumption. Whenever any of these febrile diseases produce this effect, the subsequent consumption is usually of a rapid character, approaching in some respects to the "galloping" or acute phthisis. This variety is usually more to be dreaded than any other, and can rarely be alleviated by remedial means, although it sometimes is cured. In no case is it tractable, unless the severe hectic which attends it can be checked.

The author has not written a complete treatise on pulmonary consumption, he has only given us such *illustrations* of the disease, as seemed to him most important. If the title of the work had been of a more ambitious character, we should have required a more complete account of the earliest stages of the tuberculous disease, and more ample details relative to its diagnosis. For it must be admitted that the very earliest stage of the consumption is the most interesting to the practitioner, as he then has the greatest chance of arresting its progress. The diagnosis is at that period chiefly derived from the rational signs. The use of the physical means of exploration at the forming stage is to show that the disease has not advanced so far as to affect a considerable portion of the pulmonary tissue. In other words, that the consumption is not so far advanced as to present a large deposit of tubercles—that it is not yet confirmed. It is necessary to bear this distinction in mind, else the physical signs may become sources of error and even mislead the physician. If he hastily declares the lungs to be sound, he may do serious mischief to the patient, and must always cast a certain share of discredit upon the most precious means of investigation which we possess.

In the views of treatment, given by the author, we for the most part coincide. The treatment of phthisis should always be borne in mind, and by judicious counsel we may hope to arrest or to mitigate the worst cases. There is something to be done in every stage; if we cannot cure the disease of the lungs, we may check the diarrhœa, moderate the sweats; allay the cough, and remove the pleuritic pains which so constantly torment the sufferer. It is our duty not to abandon the case, hopeless as it may be in the latter stages; we should call to mind the sage and humane advice of Bacon, and when we cannot save the patient, let us diminish the pains of death. There are not many diseases in which judicious treatment can do so much positive good, although there are few in which cures are more rare. The physician must graduate his treatment to the periods of the consumption; but if he is judicious and abstains from too active remedies, no evil but much good will result from his aid. The medicinal part of the treatment is chiefly adapted to the removal of certain symptoms, but though it is not primarily directed to the cure of the principal lesion, its influence upon it is often very effective. Consumption rarely pursues its course with equal rapidity; at one time the secretion of tuberculous matter is abundant, at another it apparently ceases. If the secondary fever, or other symptoms, which exhaust the patient, be for a time arrested, the curative action of nature is less impeded. The tubercles may be absorbed, or converted into cretaceous masses, or the cavities may become indolent, and the patient may then resort, with a fair hope of success, to the hygienic treatment. Hence, if we watch symptoms as they arise, and prevent them from harassing the patient, we prepare the way for future attempts which may be made to check the formation of new tubercles.

The success from the use of iodine and other remedies, supposed to act directly, in preventing the growth of tubercles, has not been very great. They have apparently been useful in some cases of the disease, but their action is of so uncertain a nature, and can be appreciated with so much difficulty, that like

the treatment with the homœopathic remedies, it is doubtful whether the disease is not merely pursuing its natural course.

The author is, with reason, more sanguine in his hopes of success from a change of air, exercise, the abandonment of unhealthy employments, and above all, from change of climate. This last is most useful when the patient continues to travel, instead of remaining quietly in a dull town, where idleness and ennui contribute to increase the pernicious effects which often result from indifferent lodgings and a scanty possession of the comforts of life. The West India islands are much resorted to by invalids from the United States. These islands unite many advantages; a mild winter climate, variety of scenery, constant opportunities for varying the mode of travelling by sea or land, and in general, they offer comfortable accommodations. Dr. Morton visited several of the islands in the winter of 1834, and has given us such information respecting them as fully shows the great advantage which invalids may derive from a visit to them. If the patient desires to remain stationary, Santa Cruz appears to offer more inducements than the other islands. For ample details on this subject, we cannot do better than refer to the work itself.

W. W. G.

Art. XXII. *Ueber die Harnblasenspalte, nebst Beschreibung und abbildung einiger beim Mænnlichen und Weiblichen Geschlechte Beotachteten fælle.* Von Peter Schmitt, Doctor der Medicin und Chirurgie. 4to pp. 18., Würzburg, 1836.

On congenital deficiency of the Urinary Bladder, with a description and delineation of some cases of this species of malformation in the male and female subject. By P. Schmitt, M. D.

Cases occasionally occur of a very peculiar malformation of the urinary bladder, in which the whole of the anterior part of the organ is wanting, and the mucous surface of its posterior parietes presents externally, being continuous with the skin of the abdomen; consequently the cavity of the urinary bladder does not exist, and the orifices of the ureters open upon the surface of the abdomen in the neighbourhood of the pubis. This state of things is generally accompanied with a deficiency in the bony basin anteriorly, and with some deformity of the organs of generation, more apparent in the male than in the female.

This congenital malformation has been denominated by different medical writers congenital inversion of the urinary bladder; congenital prolapsus with inversion of the urinary bladder; congenital deficiency of the anterior parietes of the urinary bladder; congenital *extrophia* or extroversion of the urinary bladder, or absence of the urinary bladder.

The most common form of it is thus described in the work before us. Immediately after birth there is observed, in the neighbourhood of the symphysis pubis, a depression of about the size of a nut, surrounded by a sharp edge formed by the external skin of the abdomen. The depression is covered with a pale red membrane resembling the mucous tissue. On either side of this depression is felt the end of the os pubis, the bone being deficient in front, with the inner edge of the rectus femoris muscle widely separated from that of its fellow, passing upwards. By the active contractions of the diaphragm in respiration, and especially by the violent crying of the child, the bottom of the depression becomes gradually raised, and finally this part is changed into an oval tumour having some resemblance to a hernia. It is acutely sensible, and in consequence of the irritation of the air, as well as from its being kept constantly wet by the urine which trickles over it, it assumes a red, spongy appearance, and increases by degrees in size, so that in an individual of from

twelve to eighteen years of age, it is nearly of the diameter of a large apple. The navel is found immediately above this tumour. The upper portion assumes gradually the appearance of a smooth cicatrix, while the remainder of the tumour is red, of a very peculiar appearance, and in spots covered with a kind of fungous protuberances. On each side of the lower portion of the tumour two spongy prominences may be observed, which are the orifices of the ureters; from these escape constantly, at short intervals, large drops of a strong alkalescent urine. These flow more freely when the patient assumes an upright position or after he has partaken freely of fluids.

In males, there is observed, immediately below the tumour a penis, which is seldom beyond two inches in length; along its upper surface runs a flat, smooth, grooved line, with a mucous membrane, and terminating upon the dorsum of a tolerably large glans. This groove is the remains of the urethra. In the centre of the glans, where the orifice of the urethra should be, there is merely a shallow depression. On its sides and under part, the glans is covered with the usual reflection of integuments forming the prepuce with its frenum. On either side of the penis is a swelling which will be found on examination to be one half the scrotum, containing a testicle. In females, beneath the tumour and on each side are found the labiæ pudendæ, the nymphæ, with the clitoris in the centre. The orifice of the urethra exists within the depression answering to the vagina.

Other particulars relating to this particular malformation are given in the treatise before us, with a notice of certain peculiarities connected with individual cases, which it is not necessary here to notice.

In the third section of the treatise is presented a catalogue of the several instances of congenital deficiency of the urinary bladder, recorded by different writers, with a reference to the works in which an account of them is contained.

The fourth section contains the history of three cases communicated to the author by professor Jäger.

The fifth section describes the anatomical characters of the malformation as it occurred in different cases; while the sixth, and last, which we here translate entire, considers its causes and treatment.

"The destruction of the anterior parietes of the urinary bladder, in connexion with the separation from each other of the ossa pubis, and of the recti and pyramidales muscles of the abdomen was formerly erroneously considered to be the cause of the prolapsus and eversion of its posterior parietes. As Meckel and Himly have very fully set forth their respective opinions in regard to the true cause of this malformation, which is unquestionably to be referred to an arrest in the process of developement in the fœtus, it is not necessary here to enter at length into an examination of the subject.

"The proposition to destroy the spongy tumour by caustics (Earle) or by the ligature, is to be entirely rejected. The attempt to cause its cicatrization by the application of astringent salves, and fomentations, or by touching it with caustic, has, in general, entirely failed. In the *Dictionnaire des Sciences Médicales* a surgeon proposes to insert into the orifices of the ureters silver or elastic catheters, the external ends of which are connected with a small reservoir sustained by bandages. In children this plan cannot be adopted, as it is productive of too much pain and irritation. It will often also be inefficient, from the circumstance of the ureters opening externally by numerous small orifices. In the generality of cases the best machine for avoiding the discomfort attending this malformation according to Bonn, is one formed like a bowl terminating below in a flask provided with a stopper." D. F. C.

ART. XXIII. *A Treatise on the Chemical, Medical, and Physiological properties of Kreosote, illustrated by experiments on the lower animals, &c. &c.* By JOHN ROSE CORMACK, Member of the Roy. Med. and Roy. Phys. Soc. of Edinburgh. Edinburgh, 1836, p. 211 and 134.

Various articles in the Journal de Pharmacie. Vide the Nos. for January, 1833, p. 27; October, 1833, p. 544; June, 1834, p. 362; February, 1836, p. 89, &c. &c.

For several years past the dry distillation of organic substances has engaged the attention and excited the interest of European chemists. This process consists in subjecting them, when deprived of moisture, to a high temperature. By this means the elementary principles of the body are acted on; they enter into new combinations, so that the products are the result of its destruction or decomposition by heat. Before the temperature is very much elevated, carbonic acid gas is given off, followed by carbonic oxide, water, acetic and other acids, and lastly come the oily and less volatile parts. If the substance contain any nitrogen, part of it unites with some of the hydrogen to form ammonia, and some may also combine with part of the carbon and produce cyanogen. After a certain period these compounds cease to be generated, and there remains a quantity of carbon uncombined with any other substance, which no increase of heat will volatilize.

In 1830, M. Reichenbach, a chemist of Blansko, while engaged in the investigation of this curious and interesting subject, discovered kreosote and five other substances, all of more or less value in medicine and the arts, and all products of the destructive distillation of vegetable matter. The names of the other bodies are eupione, capnomor, paraffine, picamar and pittacal. These important discoveries were announced to the scientific world in M. Schweigger-Seidel's Journal for 1830.

Eupione derives its name from the Greek, ευ, *very*, and πιων, *greasy*. It is an oily substance, destitute of taste, colour and odour; it is the lightest known liquid, having a specific gravity of only .655. It probably contains less carbon than paraffine, but differs in no other respect from that substance. Eupione exists more abundantly in the animal than in the vegetable tars, and is obtained most readily by distilling the tar of bones.

Paraffine is so called from its remarkable dissimilarity (*parum* and *affinis*) to all other substances. Professor Christison of Edinburgh discovered about the same time with M. Reichenbach, and read an account of it in 1831 to the Royal Society of Edinburgh. He called it petroline, because he first obtained it from petroleum; but it has generally retained the name of paraffine given to it by its first discoverer.

Capnomor is a constituent part of smoke, and hence it derives its name; καπνος, smoke, and μοιρα, part. This substance possesses an agreeable but not very strong odour, somewhat resembling ginger.

Picamar is the bitter principle of tar "*in pice amarum.*" It is a thick, oily, colourless liquid, with a peculiar but not disagreeable odour.

Pittacal (from πιττα, pitch, and καλος, beautiful,) is of a fine blue colour, and may be fixed as a dye. It contains nitrogen, and seems to belong to the same class of substances as indigo; like that body, when rubbed, it acquires a metallic lustre. It is insipid, inodorous, not volatile, and almost insoluble in water. No other chemist but Reichenbach has obtained this substance.

Kreosote, however, is by far the most important of all the products of destructive distillation, both on account of its chemical properties and its numerous practical applications. It was first discovered by Reichenbach in impure pyro-

ligneous acid, and afterwards in all the tars. Its name is derived from κρεας, flesh, and σωζω, I save.

It is an oily fluid, transparent, and when pure, perfectly colourless; its odour is very similar to that imparted to meat by wood smoke, varying, however, according to the species of tar used in its manufacture. It possesses a burning taste, followed by sweetness; its specific gravity is 1037, and boils at 397 F. It is readily combustible in the atmosphere, and burns with much smoke. When dropped on paper it leaves a stain, which soon disappears, and more speedily if a gentle heat be applied. Kreosote unites with water in two different proportions; one of the combinations being a solution of one part of kreosote in four hundred parts of water, the other a solution of ten parts of water in one hundred of kreosote. Ether, alcohol, eupione, carburet of sulphur, oil of petroleum, naphtha, and acetic acid combine with it in all proportions. It also forms a number of interesting compounds with both acids and alkalies.

The most important chemical property of Kreosote is its power of coagulating albumen, as on this no doubt depends its powerful antiseptic virtue. J. R. Cormack, Esq. of Edinburgh, in his valuable treatise on this article remarks that the action which takes place when albumen is coagulated is not exactly ascertained, but may be explained according to the hypothesis of Fourcroy by supposing that oxygen gas is absorbed. One principal reason for believing that the antiseptic property of kreosote depends upon its coagulating albumen is, that albumen does not putrify when coagulated. This property of kreosote has been applied to a great variety of useful practical purposes: and among others, it is stated in a memoir by M. Martin Solon, read before the Academy of Medicine at Paris, to be particularly valuable for the preservation of anatomical preparations.

It has also been successfully applied to the preservation of fresh meats, and hence may become an important article in domestic economy. The meats intended to be prepared should be immersed in a solution of one part of kreosote in a hundred of water: here they should remain from twelve to forty-eight hours, according to their size, when they are to be dried either in the sun or before the fire, and afterwards set aside for six or eight days, at the end of which period they will be found to have acquired the consistence, appearance, smell and taste of the finest smoked meat.

As already stated, kreosote is probably the most efficient substance yet discovered for the preservation of dead bodies of whatever kind. Birds poisoned with it resist putrefaction for a great length of time, and the bodies of animals may be *mummified*, so as to keep them sound for an indefinite period, by immersing them in a solution of kreosote in water, or by injecting a mixture containing kreosote into the blood-vessels, and the embalment may be rendered more complete by filling the cavities of the cranium, thorax and abdomen with the same solution.

And indeed from recent investigations, it has been ascertained beyond a doubt that the tarry and resinous substances from which kreosote is chiefly manufactured, were the very articles used by the ancient Egyptians in the process of embalming, and by means of which their mummies have been handed down to after ages—mementoes of the skill and science of that gifted people, as imperishable and as wonderful as the Pyramids themselves. It is stated in the Asiatic Journal for February 1836, that Lieut. Col. M. E. Bagnol presented to the Royal Asiatic Society a human hand and a piece of beef, preserved by means of a preparation of vegetable tar found on the borders of the Red Sea, in the vicinity of Mocha. The Bedouin Arabs, with whom he conversed on this subject, were of the opinion that this vegetable tar, called in their language Katran, was the article chiefly depended on by the ancient Egyptians in the process of embalming. They also believed that large quantities of camphor, myrrh, aloes and frankincense were used, but these are evidently not essential as the

tar alone penetrates and discolours the bone. The only use now made of this tar is as a plaster or ointment for the sore backs of horses and camels, rot in sheep, and lastly, in the preparation of the heads of criminals sent from the distant provinces to the seat of government. The tar is obtained from the branches of a small tree or shrub, which is found in most parts of Syria and Arabia Felix.

The process by which Kreosote is procured is complex and difficult: that of Reichenbach has been simplified and improved by other chemists. The following is the mode recommended in the "*Annales de chimie et de Physique*" of July 1835, by M. Koene. The tar derived from pit coal, is distilled in a retort provided with a long tube, having a large mouth. Under this is placed a receiver. The oil which comes over first swims on water, and it is necessary to remove from time to time the products of the distillation, till an oil is obtained which sinks in water. When this is found to be the case, the product is collected. The heavy oil obtained during the distillation condenses not only in the receiver, but also in the tube of the retort, where it unites with the naphthaline forming a buttery substance. By applying a gentle heat, the mass will drop into the receiver. The product is now allowed to remain in a cool place for some hours, after which it is pressed. The expressed naphthaline still contains oil, which is separated by heating it with its own weight of acetic acid till it melts. After allowing it to cool, the crystallized naphtha is pressed; and the acid adhering to the kreosote is saturated with sub-carbonate of potash. The kreosote is now to be shaken for a quarter of an hour with phosphoric acid, the proportions being half an ounce of the acid to twenty ounces of the oil. The mixture ought then to be agitated with its volume of water, and afterwards distilled with a graduated heat, care being taken to separate the oil which floats on the surface. The rectified oil is now to be dissolved in its own volume of a hot solution of caustic potash of the specific gravity 1120. When it has been allowed to cool for half an hour, the supernatant oil is again removed, and the heavy oil again treated with the caustic potash, only a fourth part, however, of the solution being this time employed.

On uniting the solutions of potash, a slight excess of diluted phosphoric acid is added, and the free kreosote which floats on the surface is separated. It is again rectified; and the first product, which is chiefly water being rejected, the kreosote comes over quite pure.

The mummified flesh of dead bodies has at various periods been prescribed for a number of diseases, similar to those for which kreosote is now used. It has been employed from the earliest ages. Avicenna recommends it in cutaneous diseases, fractures, abscesses, contusions, nausea, dyspepsia, hemoptoe, ulcerated lungs, palpitation of the heart, &c. It was at one time in great vogue in England and France, and is mentioned in most of the old works on the Materia Medica. Lord Bacon highly extols its power in arresting hemorrhage.

Mummy is even now, according to Madden, often prescribed by Arabian physicians. They mix it in powder with butter so as to form an ointment called *mantey*. It is used particularly for ulcers, and is considered an excellent remedy for them.

Pettigreu states that mummy fell into disrepute, not from any change of opinion respecting its virtues, but from the disgust excited on account of the mode in which it was prepared. It was discovered that the European market was supplied entirely by a company of Jews, who prepared a species of mummy in Egypt with the common bitumen of the country, and that they made use of the bodies of criminals, of those who died of the plague, and indeed of any subjects they could procure.

The Persian Ambassador presented Louis XIV. with two golden boxes filled with this precious substance. The following account is given of the presentation speech. "L'Ambassadeur de Perse dit a Louis XIV. que le baume momié etoit un specifique pour les fractures des os, et generalement pour toutes les

blessures; qu'il etoit employé pour les maladies et ulceres tant internes qu' externes: en un mot qu'il avoit la proprieté de faire sortir le fer qui pouvoit être dans les blessures."

Kreosote has now been a sufficient length of time before the public, to enable us to ascertain pretty certainly and accurately its real value as a remedial agent. We can calculate the deductions to be made from the extravagant commendations of its discoverer and early friends; and the allowances for the scoffs and gibes of that class of medical practitioners, who never admit that new articles of the materia medica can possibly have any merit or efficacy.

Reichenbach among his first experiments applied the kreosote to slight *scalds*, in which he found it eminently beneficial. Suppuration was arrested and the sores healed rapidly. In the treatment of *burns*, it has been employed in France by Berthelot and Goupil (*Bulletin Général de Therapeutique*, Feb. 1834.) They state that it has a remarkable tendency to cause the sores to cicatrize, from the circumference to the centre, and thus prevent those irregular contractions, which in so many instances produce permanent disfigurement; a crust in the first instance forms on the injured surface which spontaneously separates in a few days. In this, as in most cases of the application of kreosote, suppuration is prevented from taking place, or if it has commenced, this diseased action is arrested. This article, therefore, seems particularly adapted to burns as it prevents the two worst consequences of these accidents, viz: extensive suppuration and the contraction of the cicatrices. In our own practice the kreosote has answered in burns better than any other application.

Reichenbach records two cases of *caries* cured by the application of lotions of kreosote and water. Reports from other surgeons, however, are less favourable.

M. Frémanger recommends the following ointment for this purpose: ℞. simple cerate, oil of sweet almonds, of each ʒi.; kreosote, 30 minims—mix.

There is scarcely any disease, in which, according to the concurrent opinion of numerous physicians, kreosote has proved more beneficial than in that torturing and obstinate affection, *tooth-ache*. It has been employed on the continent for the relief of tooth-ache ever since its discovery; and for the last two years it has been prescribed very extensively in Edinburgh, and according to Dr. Cormack with very great success. We have used it repeatedly in our own practice, and although it has occasionally failed, we have no hesitation in pronouncing it superior to any remedy in common use.

According to Dr. C., and our own observation confirms the correctness of the remark, unless there be a cavity in the tooth through which the kreosote can be applied to the nerve, as a *general* rule (to this, however, there are exceptions,) no advantage will be derived from it. Where the pain is merely rheumatic, without the tooth being at all carious, a solution of kreosote in water is highly useful, relieving more speedily, certainly, and for a longer time than any other remedy.* Dr. Cormack, in the treatise already quoted, remarks that he tried it in his own person with a carious tooth, with complete success. He introduced it undiluted into the cavity, and as soon as the transient pain caused by its irritating character had subsided, he was perfectly relieved. Before this, he was generally attacked every damp day with pain, and had repeatedly tried many of the ordinary remedies without benefit. He did not now suffer a twinge for several months; the pain then returned, when a second application of the remedy was again successful, since which he has remained perfectly well.

Various explanations of the modus operandi of kreosote in these cases, have been offered, but none seem entirely satisfactory.

*Fremanger recommends the following wash, as being eminently useful in irritation of the gums. R. distilled water ʒij. pure kreosote four drops—mix.

1st. It has been supposed that the remedy produced its effect by destroying the nerve: to this it has been objected that if the nerve were destroyed, the pain would never return, whereas in most cases of relief from the use of kreosote, the pain returns after a considerable lapse of time. But the destruction of the nerve, it may be rejoined, may be partial only, sufficient to paralyse its sensibily for a while, but not sufficient to prevent a return of this sensibility.

2nd. The kreosote may unite chemically with the albumen of the fluids, which are always exuding from the cavity of a carious tooth, and thus form a crust to protect the nervous pulp from the irritating action of the atmosphere.

3d. It may perhaps afford relief by stimulating the loaded vessels of the nerve, causing them to contract and expel the blood with which they are surcharged.

The practitioner should be careful to cleanse the cavity thoroughly before employing the kreosote: the best mode of introducing it, probably, is by means of a camel's hair pencil. After this has been done, the cavity should be filled with cotton saturated with pure kreosote, care being taken, if possible, to prevent any adhering drops from touching and irritating the adjacent soft parts. If this accident should happen, however, the pain is but momentary and is not attended with any serious consequences.

Kreosote undoubtedly possesses in an eminent degree the power of *arresting hemorrhage* from the capillaries; yet its usefulness in this respect is considerably diminished on account of its tendency to prevent union by the first intention, as it can with difficulty be employed where this result is desirable.

Dr. Hoering of Neustadt, has experimented on living animals for the purpose of ascertaining its styptic properties.* He found that the bleeding from large arteries and veins was arrested by the application of a dossil of lint soaked in a solution of kreosote. Dr. Bichthauer, of Kungelsan, found it very efficient in arresting bleeding from a leech bite, which was very profuse, and had resisted various other modes of treatment, and under which the patient was rapidly sinking.

Dr. Elliottson has published several interesting cases of *cutaneous diseases*, in which the kreosote has effected a cure after various other means had been tried in vain. Professor Wolf, of Berlin, cured in eight weeks, a case of impetigo sparsa of twenty-five years standing, with fomentations of kreosote and water. We have ourselves frequently used it in cutaneous diseases, and with great advantage, both internally and externally in the form of ointment as well as lotion.

It is also highly recommended in *chilblains*. Dr. Hahn, of Stuttgart, says that whether they be ulcerated or not, he accomplishes a cure in the course of a few days with fomentations of the solution of kreosote in water. Dr. Cormack prefers equal parts of kreosote and almond oil. In a case of two or three years' standing occurring in our practice, the itching and inflammation were promptly relieved by washing the parts in a weak solution of kreosote.

Ulcers of various kinds, but particularly those of a scrofulous, aphthous, phagedenic or venereal character, are readily cured by kreosote. Dr. Shortt of the Royal Infirmary of Edinburgh, used it successfully in an extensive scrofulous ulcer of the hip, which had resisted a great variety of treatment: it at last yielded to kreosote and was ultimately entirely cicatrized. In aphthous ulceration, it is also highly recommended. The following formula of Magendie was used with complete and speedy success in a very bad case of this kind. Kreosote half a drachm, gum arabic one ounce and a half, camphor mixture ten ounces and a half, mix and use it as a wash every two hours.

The recommendations in favour of its employment in chronic venereal ulcers of the most obstinate character, are very strong. M. Lessére (*Bulletin Géné-*

*Gazette Medicale de Paris, Dec., 1834.

ral de Therapeutique) has published the following striking case of this description. On the 10th of September, 1833, a patient came to consult him under the following circumstances: on the uvula, velum palati and left tonsil were deep seated ulcers, of a livid colour, with abrupt edges. The neighbouring tissues were in a state of violent inflammation, and he experienced great pain in deglutition. During the month of December, the inflammation was subdued by antiphlogistic measures, and the ulcers were touched from time to time with nitrate of silver. The ulceration still continued its ravages, destroying the uvula, velum palati and the affected tonsil. Diluent drinks, sarsaparilla, extract of parsley root, and lastly eighty mercurial pills with opium were given: but they only served to aggravate the pain. During this treatment, the ulcers neither increased nor showed any inclination to heal. In the beginning of March the water of kreosote was applied six or eight times to the ulcerated surface by means of a pledget of lint, and in fifteen days the cicatrization was completed.

Several cautions should be borne in mind by the practitioner in the application of kreosote to ulcers. It is of great importance in regulating the strength of the solution, to remember that water dissolves only one-eightieth part of its weight of kreosote. If a small excess of kreosote be present, it will not fall to the bottom, but will float on the surface in the form of minute globules: and of course when the lint or brush is dipped in the solution, these globules will adhere, and thus a much stronger preparation than was intended will be used. It is sometimes advisable to apply pure kreosote to ulcers; but this is not generally the case; it always produces more or less irritation, and if it be applied at all in this way, it is better to wait after each application till this disagreeable effect has entirely disappeared.

It is proper to apply this article more frequently in the beginning of the treatment than afterwards, and when the ulcer assumes a healthy appearance it may be discontinued entirely. Various modes of application have been used; in solution, by means of a pledget of lint, or camel's hair pencil—in the form of ointment—or on the surface of an emollient poultice. Dr. Shortt has occasionally employed the following formula:—Take of kreosote, ten drops; vinegar, two drachms; water two ounces—mix.

Kreosote very effectually corrects the *fœtor of ulcers* and other acrimonious discharges; but whether it is better for this purpose than the chlorides, I am not able to state. It has been tried in diseases of the eye, in gonorrhœa, and in cancerous affections; but generally with very little benefit. M. Breschet, however, reported one case of cancer to the Academy of Medicine, which was greatly relieved by it; while in other instances it was entirely inert.

Of all the beneficial effects of kreosote, there is none probably more important than its power of *allaying the irritability of the stomach*, and of controlling the most obstinate cases of nausea and vomiting, arising from nervous excitability, without any organic disease of that organ. Its power in affections of this character, remarks Dr. Cormack, exceeds all other known remedies. This application of kreosote was accidentally discovered by Dr. Elliottson, from observing that in cholera it stopped the vomiting, although the other symptoms still continued, and the case hurried on to a rapidly fatal termination. Dr. E. says, he never knew it to fail in arresting vomiting, proceeding from functional derangement merely. (See this Journal for May, 1836, p. 152.) Drs. Shortt and A. T. Thompson of London, concur in this statement.

Dr. E. also prescribed it with great advantage in a case of vomiting from arsenic; and several times successfully for that obstinate and distressing malady, "sea sickness."

A short time since, the writer of this article had an opportunity of testing its efficacy in a most violent and long-continued instance of nausea and vomiting in a parturient woman. This difficulty commenced at about the sixth week of

pregnancy, and had resisted a great variety of treatment for several weeks, till she was reduced to the lowest stage of weakness and depression. Carbonate of soda, calcined magnesia, effervescing powders, enemata, gentle purgatives, every variety of diet, ice, opium, &c. &c. had all been tried in vain, or with only slight and temporary benefit. Upon learning the course that had been pursued with her, I immediately recommended the kreosote, and was most agreeably surprised at seeing the complaint promptly and entirely yield to its efficacy. She was ordered one drop in a little sweetened mucilage every two hours: in one day after commencing this treatment she was considerably better; and on the third the vomiting wholly ceased; and she has now enjoyed for more than two months as good health as females in her situation generally do. H. L.

Art. XXIV. *Dissertation on the question, how far are the external means of exploring the condition of the internal Organs to be considered useful and important in Medical practice.* By Robert W. Haxall, M. D., of Richmond, Va.—pp. 108.

Our readers may not be aware that the Boylston prize of fifty dollars is annually awarded at Boston to the best essay on a subject named by the committee the preceding year. The subject of the prize for 1836, was the utility of physical signs in the exploration of the diseases of the thorax and abdomen. The prize, strictly so called, was awarded to Dr. Holmes, of Boston, but the essay furnished by Dr. Haxall, and the one by Bell, were so excellent, that two other prizes were awarded at the special request of the committee.

The style of Dr. Haxall's dissertation is clear and simple, and perfectly suited to his subject. The memoir is necessarily short, and cannot therefore offer a minute account of all the physical signs connected with the diseases of the chest and abdomen, but it is sufficiently detailed for a fair and lucid exposition of their utility. The author writes like one who has entered into the spirit of his subject and has made himself familiar with the physical signs by that practical attention which can alone avail the practitioner. It is not sufficient to have read the works on auscultation, nor is it enough to have acquired a knowledge of the most prominent signs. No physician can really make the art available for purposes of diagnosis, unless he knows it familiarly. If he possess that acquaintance he may combine the physical with the rational signs of disease in such a way as to render the diagnosis of most affections, and especially those of the chest, vastly more certain than it could be if the ordinary symptoms were alone depended upon. Dr. Haxall has enumerated the various signs, but instead of confining himself to a mere description, he has stated the diseases to which each sign is chiefly applicable, and has entered more fully than has been usual in most treatises of the kind into the diagnosis of abdominal affections, including typhoid fever. He has given to this portion of his subject nearly its full developement, and has shown that the physician should never forget to examine the abdomen, in cases of suspected disease, by the touch and percussion. The author has well described the lesions of the thoracic organs and the physical signs corresponding to them. He is remarkably correct in the description, and although the subject is not carried to its full extent, enough is said to show that no single means of diagnosis is nearly as useful to the physician as the physical signs. There the greatest utility consists in the practitioner's application of the knowledge they furnish.

W. W. G.

ART. XXV. *Periodico de la Academica de Medicina de Mégico. Nos.* 1 *to* 8, *inclusive. Mexico*, 1836–7.
Journal of the Academy of Medicine of Mexico.

We have been furnished through the politeness of the respectable editor of the above Journal, Dr. L. Blaquiere, with all the numbers up to February of the present year. It is issued monthly in numbers of about thirty-two pages, octavo. The contents of those already published, present a very favourable specimen of the zeal and industry with which the different branches of medical science are cultivated by our southern neighbours.

In general, each number comprises, 1st. Original communications; and 2ndly. Extracts and notices, principally from the foreign journals. Among the first are many able and interesting observations; indeed the work throughout confers no little honour upon its editor, and it will be found, we are persuaded, well adapted to promote the great object of its publication, the diffusion of correct medical information among the physicians of Mexico. We shall doubtless be able, hereafter, to enrich our quarterly periscope from its pages.

ART. XXVI. *The Retrospective Address, upon Medical Science and Literature, delivered at the Fourth Anniversary Meeting of the Provincial Medical and Surgical Association, held at Manchester, July* 21*st*, 1836. By JOHN GREEN CROSSE, Esq., M. D., F. R. S., Surgeon to the Norfolk and Norwich Hospital, &c. &c. &c. Worcester, 1836. 8vo. pp. 88.

This address presents a highly interesting and elaborate summary of the progress of our science during the past year, which must have cost the learned author much labour and research. It concludes with some judicious remarks on the medical literature of the day, which we regret being unable to quote, from the limited space at our command. Our collaborators cannot but feel flattered at the following very complimentary notice of this Journal.

"One American Quarterly,* which I can speak of from a regular inspection of each number from its commencement, claims a rank with the preceding, [The British and Foreign Medical Review,] and may be said to possess some advantages above every other Journal, in the number and rank of its avowed '*collaborators*,' and in each article in the review department being authenticated with the writer's signature; no coarse, personal, or unscientific matter, ever enters the pages of this periodical."

* "*The American Journal of the Medical Sciences*, edited by Isaac Hays, M. D., with about forty "*collaborators*," including men of the highest renown, and holding the most important hospital and professorial appointments."

QUARTERLY PERISCOPE.

FOREIGN INTELLIGENCE.

SPECIAL ANATOMY.

1. *Structure of Bone.* By Professor JOHN MULLER of Berlin.—"*Purkinje* and *Deutsch* have lately published some interesting investigations, entitled, *De Penitiori Ossium Structurâ;* Diss. inaug. Vratisl. 1834. Tab. i. These investigations have been continued in Berlin by Dr. Miescher, who has for the most part confirmed their accurracy. *Purkinje* and *Deutsch* examined the cartilage of the bone cut into thin plates, and from which the earthy salts had been removed by an acid. Transverse slices of the long bones, when examined by the microscope, present cross sections of the longitudinal canals that traverse the substance of the bone; while longitudinal slices exhibited these canals in the direction of their axes. These canals contain marrow, and do not run together very frequently. In bones of a spongy texture they are replaced by cells containing medullary matter. These authors were lucky enough to discover the lamellar structure of the cartilaginous frame work of the bones. In the transverse sections the laminæ presented circular lines described round each of the canals; while in the longitudinal they appeared like lines parallel to the axis of each canal.

"The intervals between the laminæ that surround each minute medullary canal, are occupied by other laminæ that form larger circles round the central medullary cavity of the whole bone; in the broad bones of the cranium, and other flat bones, the laminæ lie parallel to the surface. *Miescher* has entirely confirmed these observations. The microscope discloses also other lines which run across these laminæ, perpendicular to their surface, and which *Deutsch* believed to be the canals that contain the phosphate of lime, a supposition not confirmed by *Miescher*, who found that the first appearance of ossification in the cartilaginous epiphyses of young bones, and in callus, consists in a microscopic dark-coloured network between the corpuscles forming the cartilage. As these lines run across each laminæ, they of course only equal in length the thickness of the latter; now *Purkinje* has made the very interesting discovery, that the cartilage of bone contains many scattered, round corpuscles, of much greater diameter than these lines; Miescher has not only confirmed this discovery, but has found similar corpuscles in the callus of fractured bones, in the cartilage of unossified skeletons, and also in those portions which either never ossify, or only do so in advanced life; as, for example, in the cartilaginous portions of the ribs and the larynx. These parts consist, as is well known, not of a fibrous, but an homogeneous structure, throughout which these corpuscles are scattered."—p. 59 *et seq.*

Müller remarks upon this subject, that the laminæ visible in the cartilage do not make their appearance until after the formation of the minute medullary canals, and consequently the former cannot be considered as *primitive* constituents of cartilage. He observes, too, that these laminæ distinguish cartilage from periosteum, and serve, along with the presence of the corpuscles above referred to, to distinguish most definitely the structure of the cartilages of bones from that of periosteum, which consists of tendinous fibres. These corpuscles are not

the chief seat of the earthy or saline particles, nor does it yet appear how the latter are distributed. When the laminæ of bones, tinged with madder, are examined, the colour appears universally disseminated throughout the whole mass, and consequently as the earthy particles are the cause of fixing the colouring matter, they may be concluded to be equally diffused.

The corpuscles above spoken of, as visible in cartilage after the removal of the osseus particles, by means of an acid, may be distinguished without this in the finest laminæ or plates of the peculiarly delicate cobweb-like osseous reticulation, which we sometimes meet with in the medullary cavity of the human femur. These laminæ are quite transparent, and exhibit the corpuscles of an oval, occasionally rather elongated shape, uneven, and when viewed with a high magnifying power, jagged on the surface. This latter appearance is entirely wanting in the corpuscles of amphibious animals and fishes, and indeed generally is not met with. The outward table of the skull of pigeons exhibits plainly these corpuscles, even before the earthy particles have been dissolved out by an acid. —*Dublin Journal*, Sept., 1836.

2. *Three kidneys found in a human subject.*—Dr. C. H. Thielmann of St. Petersburg has recorded an instance of this in *Graefe und Walther's Journal für Chirurgie*. The subject of the case was a sailor æt. 30, who died at the naval hospital at Oranienbaum, of typhus fever. On dissection, the left kidney was found of an extraordinary size, but in respect of situation, colour, consistence, and the insertion of its blood-vessels and nerves, it was perfectly normal. The right kidney, the structure of which was altogether healthy, was situated opposite to its fellow the left one, and rested on the lumbar portion of the diaphragm and the quadratus lumbaris muscle. Its ureter, which was rather smaller than that of the left kidney, passed down as usual to the place where the aorta divides into the two common iliacs. At this point, there was found a third renal gland, which rested on the right iliac artery, and on the psoas muscle. This third kidney was larger than the right one, and was of an oval shape, its two ends being somewhat widened or dilated. Its anterior surface was convex, the posterior one was flattened. The ureter of the right kidney, in passing along a longitudinal groove of this supernumerary one, joined, at about the middle of the gland, its ureter, and the common canal thus formed, and which was wider than either of the regular ureters, passed down to the bladder, and entered it at the usual place on the right side. The third or supernumerary kidney received three arteries; one of these was derived directly from the aorta, another from the right iliac, and the third from the hypogastric artery. One of its veins terminated in the ascending vena cava, and the two other in the right iliac vein. Its nerves were derived from the inferior mesenteric plexus, and they were interlaced with the right spermatic and renal plexuses. The structure of this kidney was altogether similar to that of the other two, in colour and in consistence. The relative size and weight of the three kidneys may be stated thus. The left kidney weighed upwards of eight ounces—the right one between three and four ounces—the supernumerary one upwards of five ounces. The left kidney was four inches and a half long, and nearly three inches wide—the right one measured three inches and a half in length, and nearly two inches in breadth—and the supernumerary one measured three inches and a half in length, and rather more than two and a half in breadth. The right and left kidneys were provided with supra-renal glands; the supernumerary one was not. The bladder and other parts of the uro-poietic system were quite normal. The man had never suffered from any urinary affection.—*Med. Chirurg. Rev.* Jan. 7, 1837.

GENERAL ANATOMY AND PHYSIOLOGY.

3. *On some points in the Physiology of Hearing and Seeing.* By Dr. Steinheim.—Seeing and hearing singly, with double organs of sense, belong undoubtedly to the more difficult points connected with the functions of the senses. It is well known that the single sense of touch is lost by crossing the fingers; for a little ball, as for instance a pea, communicates the sensation of two, when it is rolled backwards and forwards between the two first fingers crossed.

Something quite analogous to this takes place with respect to the sense of sight, in cases of absence of mind.

The object of sight separates gradually into two distinct images, an affection which is not unfrequently observed in cases of abdominal derangement. As when the fingers are crossed, the usual sentient association is interrupted by changing the position of the nerves employed, and in such circumstances each sentient nerve conveys its individual impression to the mind; so when the direction of both eyes to a single object is interrupted, the ordinary position of the optic nerves is changed, and each becomes sensible to the individual impression. If we now reflect, that in both the cases alluded to, it is the business of consciousness to receive the double impression as a single one, (in consequence of which the error produced by the unusual position of the nerves of touch, is, after a few experiments repeated in quick succession, corrected,) the impression made on the senses is, without doubt, in every instance double with respect to the three objective senses—touch, sight and hearing.

This phenomenon is universally known with regard to the two first senses; the same thing remains still to be proved with respect to the sense of hearing; namely, "THAT EVERY SOUND IS HEARD BY EACH EAR SINGLY, AND MAKES TWO IMPRESSIONS WHICH BECOME BLENDED INTO ONE.

In order to perceive this phenomenon, the following procedure should be adopted. The experimenter strikes two quarter notes with two fingers of the left hand, and at the same time a half note with one finger of the right hand; if he now listens attentively to the sounds produced by the right and left hand, he will hear four instead of three sounds; provided the notes are struck in such a manner that the stroke of the right hand finger falls between the two strokes of the left, which are only half as long as that of the right; that is to say, on the left a triole (000) and on the right a single stroke, and the latter will be thus doubly heard, between the two quarter tones, and at the same time individually as a half note.

Now, we cannot well imagine that the note produced by the right finger is heard twice by one ear; it remains then only to assume, that it is perceived by the right and left ear separately.

It may not be here out of place, to communicate some observations on seeing, which belong to this point.

Any person whose eyes have different focal distances, may easily repeat them, as I have frequently done. Persons are seldom aware of the unequal power of the double organs of sense, unless it be very remarkable, or happen to be discovered by accident. I know a man, who became for the first time aware of an amaurosis of the right eye, on looking one day through a telescope, and finding that he saw nothing. He cleaned the glass, but in vain, and then for the first time became conscious that he had lost the sight of his right eye. With regard to myself, I was informed of the twofold difference between my right and left eye, in the following manner. I happened to be in a rather dark room, opposite a door, at the moment when the opposite illuminated wall was seen distinctly through the keyhole. The bright image of the keyhole separated into two, and these two very dissimilar images. The image of a large bluish keyhole presented itself opposite to my left eye, that of a small yellowish white one opposite to my right eye; in the larger one the lines of the opposite bright wall, which shone through, were confused together; in the smaller the same white lines were sharply defined. Further trials of my sight, by looking at a white surface with each eye alternately, convinced me that my right eye was *myopic*, (short-sighted,) and saw objects large, and of a blue colour; and that my left eye was *presbyopic*, (long-sighted,) and saw objects small, and of a yellowish colour.

But how then did it occur that the image of the keyhole opposite my left eye appeared larger, more indistinct, and bluish; while that opposite my right eye seemed smaller, more sharply defined, and yellowish. It was produced by the crossing of the image, for in this way the image seen by the right eye was to the left of that seen by the left eye, and *vice versa;* and hence it happened that it must have appeared to me as if both eyes had exchanged their mode of seeing.

In this way I explained to myself this singular optic phenomenon. There is another, which up to the present day is still to me a riddle. It is well known that we can assist a short-sighted eye by diminishing its field of vision. Short-sighted

persons instinctively draw their eyelids together, or look through a small opening between the index and middle finger, formed by laying their tips perpendicularly on the thumb nail. This artifice is of great help to my right eye, but it also assists my left eye, which is long-sighted, and that is to me a problem, the explanation of which I cannot even conjecture. As distant objects appear clearer and more distinct to my right eye, when I look at them through the small triangular opening formed by the three first fingers, in the same way near objects become distinct to my long-sighted eye by the same mode of proceeding.

Another phenomenon, which seems to be worthy of attention is, that from two different images seen by each eye separately, a single homogeneous one is produced, in such a manner that with respect to distant objects the colouring of the far-sighted, and with respect to nearer objects, that of the near-sighted, preponderates. Again, the power of vision in both cases is diminished, when one or other of the eyes is closed. Near objects, which I can no longer discern with the left (far-sighted) eye, and consequently must be seen with the right, become still more indistinct when I close the left; and I also see distant objects more clearly with both eyes than with the left alone, with which alone, however, I am able to discern distant objects.—*Dublin Journal*, January, 1837, from *Hecker's Annals*, 1836.

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4. *Discovery of ciliary motions in the cavities of the Brain.* By PURKINJE.—"I have succeeded at last in discovering the Ciliæ and their motions in the ventricles of the brain in the mammalia. Last summer, while examining the Chordæ Bergmanni, I perceived on fine sections of the epithelium, a structure resembling the ciliary membranes, and suspected that this epithelium possessed a similar function. I thereupon made numerous investigations with this object in view, but without any result, until the 23d of May, when I succeeded in discovering the ciliary motions in a state of the most beautiful activity, on the edge of the Tenia Hippocampi, in the tolerably mature fœtus of a sheep thirty hours after slaughter. They now appeared quite distinct over all the windings of the ventricles, and they could be plainly distinguished, even where they did not appear in motion. I followed the motions without difficulty through the third ventricle to the infundibulum, to the olfactory tubercles, and finally through the aqueduct of Silvius into the fourth ventricle. Here the motion ceased, but the ciliæ were still distinctly observable, although somewhat shorter than in the foregoing situations."

"The ciliæ are proportionably long, pointed, (not ragged as in the bronchial tubes,) and exhibit a whip-like vibration; we perceive also a layer of granules to which they are attached, and which are very easily rubbed off without destroying the continuity of the epithelium. The other day I examined the brain of a sheep, in which they could also be perceived with great facility. They have been seen likewise by Dr. Valentin in the tolerably matured fœtus of a sow; in another fœtus of the same description, at a much earlier period, they could not be distinguished: probably the parts are too delicate for our clumsy instruments. On the whole, I have perceived from these few examinations, that the ciliæ found in the ventricles of the brain possess a finer degree of sensibility, and are much more easily destroyed than those of any other organ; I have not been able to discover them in the brain of a sparrow, or of a carp, which I examined, but cannot, on this account, draw any conclusions as to their non-existence. I could not detect any traces of them in a diseased human brain which was sent me: probably they are very transient, (as appears to be ascertained from the female ovary, and the mucous membrane of the nose), but as easily reproducible. I could not find any ciliæ in the membrane of the choroid plexus; but I have made long since a very interesting observation on this membrane. The whole plexus is covered by a peculiar matter, like the granular substance of the ganglions; and composed of the most regular granules, each of which contains a small corpuscle in its centre. This membrane appeared to me at the time as belonging to the nervous tissues, although at present I see so many reasons to look upon it as epidermal.—*Dublin Journal*, March, 1837.

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5. *On Digestion.* By Dr. SCHWANN, of Berlin.—It is known that Eberle discovered in the year 1834, that the mucous membranes, when digested in dilute

muriatic and acetic acids, furnished a mass similar to the gastric juice, which dissolved, and altered most alimentary matter, in a manner similar to what takes place by digestions in the stomach. The same fact was stated by Müller and Schwann with regard to coagulated albumen; and further, the latter experimenters have proved, that in this operation there is neither change in the contiguous atmosphere nor disengagement of gas. From these facts it was interesting to know what the bodies are which in the natural gastric fluids, of which Eberle has recognised the identity of action with the acids mentioned above, produce the solution and modifications undergone by the alimentary matter in the interior of the stomach.

The first experiments of Schwann on artificial digestion, indicated that there was not one sole dissolving agent, but that the bodies, which are the agents of this solution, are themselves different for different kinds of alimentary matter. The attempts made hitherto upon this class of phenomena have demonstrated that these latter substances may be ranked under three classes.

1. Those which, without the assistance of the free acids of the gastric juice, may be perfectly digested by the saliva; to this class belongs starch exposed to the action of heat, which, by artificial digestion in the saliva, as well as in the stomach, is converted into gum and sugar.

2. Those which are only dissolved by dilute muriatic or acetic acids; to this class belongs coagulated caseum, gelatin, or gluten. At least, the reactions which are exhibited in solutions of these substances in dilute acids agree in the principal particulars with those which Tiedemann and Gmelin have observed in the natural digestion of these substances; gelatine, for example, in this way loses the property of coagulating and precipitating by chlorine which characterizes it.

3. Those to which, besides the free acids, the assistance of another digestive principle is still necessary; such are all the albuminous substances, and especially the coagulated white of egg, fibrin, and, to a certain extent, dissolved caseum.

This latter class of substances has particularly attracted the attention of the author, both because it contains the most important alimentary matter, and because they answer perfectly for experiment.

In order to make these experiments, a *digestive fluid* was procured by digesting, for 24 hours, the mucous membrane previously prepared from the third and fourth stomach of an ox in water, acidulated with 2¾ per cent. of muriatic acid, and filtering the fluid. This digestive liquid thus prepared contained nearly 2¾ per cent. of solid matter in solution, and required above 2 per cent. of carbonate of potash to neutralize it. It dissolved almost entirely coagulated white of egg, by exposure for several hours to a temperature of 100°. The researches of Müller, and of several other chemists, have proved that acids simply diluted do not dissolve albumen, and that consequently acids by themselves have no action, and that something else must assist in the act of digestion. Schwann had observed, besides, that the digestive liquid described lost its action by saturation, and that consequently acid must play an important part in digestion; but that, independently of acid, the presence of another body is still necessary. The researches, then, upon the action of acid tend to demonstrate the following facts:—1. That there is nothing less than neutralization of the digestive fluid, from which nothing has been precipitated, that can deprive it of its digestive power. 2. That the digestive fluid diluted with acidulated water produces good digestion, but not if it is diluted with water only. The necessary quantity of acid not being regulated by that of the digestive principle, but by the quantity of water, of which it ought to amount to about 2¾ per cent. for the muriatic acid of commerce. 3. That the quantity of free acid by the act of digestion remains unaltered.

Hence we have a right to conclude, that the free acid assisted not only in the formation of other digestive principles, and for solution, or to form chemical combinations with them, but besides that, it acts by the effect of contact, as in the transformation of the starch into sugar.

It remained to investigate the properties of this other *digestive principle*, which is active, and independent of the acid. The new researches of Schwann have in the first place proved that the digestive fluid when filtered and perfectly clear dissolves albumen, and that it is itself soluble in dilute hydrochloric and acetic acids; that when it is neutralized and filtered, and a certain quantity of acid is added to the clear liquid, this fluid preserving its digestive power, the principle

must remain in the state of solution in the neutral fluid, and that if neutralized the digestive fluid is evaporated at a very low temperature, so that it shall not lose its property, and if the residue be treated with alcohol, the digestive property disappears; that the digestive principle is equally destroyed by alcohol; and lastly, that when heated to the point of ebullition the fluid and the principle were decomposed.

To test the action of ordinary re-agents, Schwann confined himself to mixing each of them with the digestive fluid in an acid or neutralized state, by separating by filtration the precipitate from the liquid portion, washing carefully the former, and re-dissolving them in water containing 2½ per cent. of acid; and lastly, treating by a new re-agent, which might increase at least in part the effect of the first, such, for example, as sulphuretted hydrogen. In this manner, according as the digestive property remained in the fluid containing the precipate, or in that which had been filtered, and which contained the unprecipitated parts, the digestive principle, was separated by the re-agents, or resisted their action. By this means it is ascertained that acetate of lead precipitated this principle from the acid digestive fluid more completely than in that which had been neutralized; that this principle is equally precipitated from neutral solutions by corrosive sublimate, but not in the acid digestive fluid by the ferrocyanodide of potassium. One of the most characteristic re-actions is the precipitation of caseum, or the coagulation of milk. The latter when heated by the digestive principle exhibits the following results: 1. The digestive fluid produces the coagulation of milk by means of heat, when its quantity does not exceed 0.42 per cent.; while for a liquid which contains only hydrochloric acid diluted to the same degree, it requires more than 3.3 per cent. 3. An elevation of temperature to the boiling point removes this property from the neutralized digestive fluid, which authorizes us in concluding that the digestive principle is thus destroyed. 4. The digestive fluid and the caseum dissolved, may be mutually employed as re-agents; a fluid which only contains .0625 per cent. caseum affords still a sensible precipitate with the neutralized digestive fluid.

These various reactions of the digestive principle characterize a new substance to which Schwann proposes to give the name of *pepsine;* and it is obvious that the manner in which this substance acts with caseum is sufficient to distinguish it from all others, and especially from mucus. Mucus appears to be the substance at the expense of which the *pepsine* by a peculiar transformation, and treatment by dilute hydrochloric acid is formed; at least pure mucus, that of the saliva for example, treated by dilute hydrochloric acid exhibits, although in a feeble degree, the power of dissolving albumen. In reference to the action of the digestive principle upon albumen, Schwann considers it to be the effect of contact; this conclusion is especially drawn from the small quantity of pepsine which is sufficient to dissolve a great quantity of albumen. Acidulated water, which contains only ¼ per cent. of digestive fluid, still manifests sensibly the power of dissolving albumen, and with ¼ of an ounce of acidulated water to which 4.8 grains of digestive fluid have been added, nearly a drachm of coagulated albumen of the white of egg will be dissolved in 24 hours at the temperature of 99.5. Now as 4.8 grains of digestive fluid only contain 0.11 grains of solid matter, and as 1 drachm of moist albumen weighs about 10 grains after desiccation, we see that in considering all the solid matter contained in the fluid as pepsine, 1 part of this substance acts upon 100 parts of albumen. As in this action the digestive principle loses a great part of its digestive properties, it follows that it has undergone a change; however it should be observed, that among the conditions necessary for developement of this action in the most complete manner a temperature of from 99 5 to 132° is required, but it is still manifested at 34½° and 59°. At the favourable temperature, coagulated albumen when it has been sufficiently comminuted, dissolves in from 6 to 24 hours, fibrin extracted from the blood in from 3 to 12 hours. The presence or the contact of atmospheric air, according to Müller and Schwann are not necessary in this action, and there is no evolution of gas; some salts, such as the sulphate of soda, which acts equally upon the vinous fermentation, oppose the digestion of albumen.

The changes which albumen and fibrin undergo by the action of pepsine united with acids, is not a simple solution, but a decomposition, since the first of these substances occasions—1. A substance which resembles the coagulated albumen of eggs, which is entirely dissolved in the acid, and is precipitated by

neutralization. 2. Osmazome. 3. Mucus. The digestion of the fibrin gives the same products with the exception that the fluid in which the fibrin has been dissolved does not contain coagulated albumen, which can be precipitated by an elevation of temperature. Boiled and raw muscular fibre dissolve like fibrin, although with a little more difficulty.

In conclusion, Dr. Schwann refers to his original paper inserted in *Müller's Archiv.* 1836. s. 90.—*British Annals of Medicine, March* 3, 1837, and *Poggendorff, Annalen*, xxxviii. 538.

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6. *Some experiments and observations on tying the carotid and vertebral arteries, and the pneumogastric, phrenic, and sympathetic nerves.* By Sir Astley Cooper, Bart.—The anastomosis of arteries in all parts of the animal frame, and the circuitous channels through which the blood, when arrested in its progress along a principal trunk, is conveyed to its destination, have been for some time well ascertained; and the advantages arising from this arrangement of vessels in the natural condition of the body, as well as the safety afforded by it under certain accidents, diseases, and operations, are perfectly understood.

The existence of these anastomising vessels has been proved, by the examination of diseases in which blood-vessels have been obliterated, by experiments performed upon the arteries of living animals, and by the result of surgical operations upon the human subject, and the dissections after death; and the injected preparations contained in our anatomical museums exhibit, for the principal arteries of the body, the place at which the main trunk has been rendered impervious, and the mode in which the circulation has been preserved.

In the chest, the aorta has been obliterated by disease, and the intercostal arteries have supplied its place in carrying on the blood. In the abdomen, the aorta has been entirely obstructed by an aneurism situated above the bifurcation; the two iliacs below being reduced to mere cords. The common iliac has been successfully tied by Mr. Guthrie; and the internal iliac by Mr. Stevens. The external iliac, and the arteries below it, have been now so frequently tied, and the anastomosing vessels so clearly demonstrated, that no doubt is entertained of an adequate supply of blood being sent to the lower limbs after these operations.

The subclavian arteries have but few anastomoses; but they are still sufficient to nourish the upper extremity; and the arteries of the arm below may be tied without danger of an insufficient supply by subsidiary currents.

The carotid arteries have been found, by Baillie, obliterated by disease. That artery has been now frequently tied on one side of the neck; and it has even been secured, at distinct periods, on both sides of the neck of the same person: and in these cases the current of the blood has still flowed freely into the remote branches.

Still, however, the intimate connexion between the functions immediately essential to life—of the brain and other organs, and the necessity for a due supply of blood for the maintenance of cerebral action, gives to the vessels of the head extreme importance in the eyes of the surgeon and physiologist, and justifies him in pushing his inquiries respecting them to the utmost limit.

It will be seen that some animals die immediately from interrupting the circulation in the carotid and vertebral arteries; but that others survive the experiment, and give an opportunity of ascertaining the means of anastomosis.

Ligatures placed upon the vertebral and carotid arteries of a dog.—On the 28th of January, 1831, I tied the right and left vertebral and the right and left carotid arteries of a dog, and all was completed within half an hour. The animal appeared insensible, or as if it were intoxicated; it had difficulty in breathing; its pupils were dilated; its volition was diminished; and it ran against the leg of the table, or any other body, without seeing or regarding it. When placed upon its legs, it fell down on its right side, and had spasmodic twitchings of its hinder extremities. At the expiration of a quarter of an hour, it was still insensible: it had shiverings, although placed near the fire: it rested its head upon the ground on the right side: its respiration was still laborious; and its pupils were dilated. After an hour and a half, however, it was able to stand, and, although with difficulty, to stagger around a small room.

On the 29th, it was dull, and indisposed to move. On the 30th, it was much

the same, and not inclined to move or eat. On the 31st, it walked round the room; and ate about an ounce of food, but would not lap. On the 1st of February, it was much better: it ate and drank; and from that time gradually recovered. It afterwards became a good house-dog; and I kept it for nine months, when it was killed, that I might inject it. The number and the size of the anastomoses were very extraordinary. The description of them is as follows: The carotid artery on the right side was obliterated opposite the fifth and sixth cervical vertebræ: below the obliteration it is injected from the aorta; above the obliterated part it is filled with injection, (1) from the inferior thyroideal artery communicating with the superior thyroideal by large branches; (2) by a large descending cervical branch, dividing into numerous large anastomoses; and (3) by branches from the vertebral artery anastomosing with the external carotid artery on the first vertebra of the neck. The left carotid was obliterated from near its origin, but filled with injection above the obliterated part, by the inferior thyroideal artery communicating with the superior, and by the ascending cervical artery from the subclavian, by numerous and large anastomoses, and by an œsophageal artery from one of the intercostals communicating with the superior thyroideal artery. The right vertebral artery was obliterated near its origin on the seventh cervical vertebra, but filled with injection above the obliterated part by two branches from the superior intercostal arteries, which passed, on the back of the spine, into the arterial canal of the vertebræ, at the fourth, fifth, and sixth intercostal spaces. The vertebral artery thus produced passed to the second vertebra of the neck, where it formed the basillary artery, and, in its course, had festoons or loops formed in it, as far as the first vertebra, at each intervertebral substance; and here, upon the transverse process of the first cervical vertebra, it formed communications with the carotid. The left vertebral artery was obliterated close to its origin, but was filled with injection by an anastomosing branch from the superior intercostal artery, which entered between the fifth and sixth vertebræ of the neck; and by a second branch, also, from the intercostal artery passing on the posterior surface of the transverse processes of the fourth and fifth cervical vertebræ; then, over each transverse process was a loop of arterial communication, forming down each side a beautiful display of festoons.

On a second occasion, I tied the left vertebral artery of a dog. I then secured the right vertebral; and after an interval of eight days I put a ligature on each carotid artery. The animal was weakened in its forelegs; but in other respects it suffered less than the former; and on the following day it took its food as usual. The right carotid was obliterated; the injection passed from the aorta to the obstructed part, and above it, by an anastomosing vessel from the vertebral, and by an ascending cervical artery from the right subclavian. The left carotid was obliterated, but filled with injection to the place of obliteration, from the aorta; and above, it was filled by an ascending cervical, an inferior laryngeal branch, and others from the vertebral. The right vertebral artery was obliterated opposite the seventh cervical vertebra, before it entered the foramen of the sixth vertebra; but above the obliteration it was filled by an anastomosis with the superior intercostal artery: it then ascended through the canal in the sixth cervical vertebra, forming beautiful festoons and injunctions with arteries passing over the vertebra, opposite each intervertebral substance, and joining, by anastomosis, with the carotid at the first vertebra of the neck. The left vertebral artery was obliterated at the seventh vertebra; but the artery formed anastomosis, one with the subclavian, and two with the superior intercostal. The artery on this side formed similar but larger junctions than the right, opposite to each intervertebral substance, in festoons or loops; and thus the vertebral artery was reproduced, and filled with injection from these vessels. The two vertebral united to form the basillary artery as usual, and joined with the internal carotids at the circle of Willis.

Where the basillary artery was first formed, anastomosis were sent to the carotid arteries on the transverse process of the first cervical vertebra.

The result of tying the carotid and vertebral arteries in the dog is such as I have described; but in the rabbit it is different, as in this animal the arrest of the blood in these four vessels is immediately fatal.

Besides the determination of this point, it was my object, in the following ex-

periments, to ascertain the different effects which would be produced by tying separately the vertebrals and the carotids. The size of the carotid arteries, compared with the vertebrals, is much less in some animals than in man, in proportion to the inferior developement of the cerebrum; and the tractus respiratorius being supplied by the vertebrals, the current of blood in these arteries might be supposed to exercise an influence on the respiration.

Ligature placed on both carotid arteries.—In the first place, I applied a ligature to the carotid artery on each side of the neck. Little effect was produced; except, that the respiration was quickened for a few minutes, and the animal rendered dull and disinclined to eat during the day: but on the following morning it appeared lively, and ran about with its natural activity. So that it may be truly said, that these two arteries may be tied with very little change in the functions of the animal, excepting that the respiration is quickened; and this perhaps may be attributed to a greater quantity of blood being impelled through the vertebral arteries, in consequence of its interruption in the carotids.

Ligatures placed on both vertebral arteries.—I next placed a ligature around both vertebral arteries. When I had tied the first, there was some difficulty in breathing; but when I had tightened the second ligature, this difficulty was greatly increased. The respiration was at first slow, but it afterwards became quicker. The animal retained volition and sensation, but its fore legs were weakened.

At the end of two hours, its breathing was laborious; its ears dropped to the right side; its heart beat quickly; it was dull, and indisposed to move; and its fore legs were still weak. After four hours and a half, it ran about, but with its ears fallen: its respiration was slower. On the following day, there was a murmuring in its breathing, which was increased under excitement: its heart beat quickly and forcibly: its pupils were not dilated. On the second day, the respiration was slow and heaving; it had an irregular action of the heart; it was dull; and its heat was 102. In the evening, its respiration was irregular and heaving; but it moved about, and took food. On the third day it was dull: its breathing was slow: its heart beat quickly: it ate food. On the fourth day, it appeared heavy, and indisposed to move. The action of its heart was quick and strong: its respiration was slow, but no longer stertorous. On the fifth day, its breathing was slow: it appeared dull and heavy: the action of the heart was still quick. On the sixth day, the respiration was laborious and slow, being only 64, instead of between 120 and 150, the natural number of inspirations in a minute: its heart beat rapidly, and not forcibly; it was very dull, and indisposed to move: it was getting thin, but took its food as usual. On the seventh day the animal was found dead; and on the eighth I examined it, after injection, and found an abscess in the neck. The vertebrals had been well secured, and the brain had received injection by the carotid: the basillary and cerebellal arteries were filled from the circulus arteriosus. This animal's death may have been hastened by the abscess.

I have many times repeated this experiment; and it uniformly produces a marked effect upon the respiration, which it renders slow and laborious. The fore legs are weakened; and a much more severe effect is produced upon the animal than when the carotid arteries are obstructed; insomuch, that it will rarely recover from the operation.

The carotids first tied, and then the vertebrals.—The next step was, to ascertain the effect of arresting the blood in the vertebrals, after the carotids had been secured. I tied the carotid arteries: the respiration and circulation became quicker: volition and sensation remained in all their activity. In twenty-four hours, the animal appeared very lively, but its breathing was quicker than natural. After forty-eight hours, it breathed less quickly; it ran about in a lively manner; and it ate heartily. On the third day it was difficult to catch: on the fourth, fifth, sixth, seventh, and eighth days, it appeared to be in a natural and healthy state: and on the ninth I exposed the vertebral arteries, and found them obviously enlarged. A ligature was tied upon each of these vessels. The respiration stopped immediately, and the animal appeared dead; but it afterwards made seven gasps, from convulsions of the diaphragm: its hinder extremities became also convulsed; but in a minute, all voluntary motion ceased.

On opening the abdomen and chest, it was seen that the peristaltic motion of the intestines remained; and the heart continued to act for a few minutes after apparent death.

This experiment shews how little the functions of the brain depend upon the carotids, and how much upon the vertebral arteries.

Carotids tied—vertebrals compressed.—As tying the vertebral arteries is a difficult experiment, it occurred to me that I might compress them with my fingers, after tying the carotids, and produce the same effects. I tied the carotid arteries. Respiration was somewhat quickened, and the heart's action increased; but no other effect was produced. In five minutes, the vertebral arteries were compressed by the thumbs, the trachea being completely excluded. Respiration almost directly stopped; convulsive struggles succeeded; the animal lost its consciousness, and appeared dead. The pressure was removed; and it recovered, with a convulsive inspiration. It laid upon its side, making violent convulsive efforts; breathed laboriously; and its heart beat rapidly. In two hours it had recovered; but its respiration was laborious. The vertebrals were compressed a second time. Respiration stopped: then succeeded convulsive struggles, loss of motion, and apparent death. When let loose, its natural functions returned, with a loud inspiration, and with breathing excessively laboured. In four hours it was moving about, and ate some greens. In five hours the vertebral arteries were compressed a third time, and with the same effect. In seven hours, it was cleaning its face with its paws. In nine hours the vertebral arteries were compressed for the fourth time; and with the same effect upon its respiration. After thirteen hours, it was lively. In twenty-four hours, the vertebral arteries were compressed for a fifth time, and the result was the same, viz. suspended respiration, convulsions, loss of motion and consciousness. On the removal of pressure, violent and laborious respirations ensued; and, afterwards, the breathing became very quick. After forty-eight hours, for the sixth time, the compression was applied, with the same effect.

Thus it appears, that if the carotid arteries are tied, simple compression of the vertebrals succeeds in putting an entire stop to the functions of the brain.

Vertebrals tied—carotids compressed.—I then reversed the preceding experiment, by impeding the current of blood first in the vertebral arteries. I placed a ligature tightly around the vertebral arteries. The respiration became immediately laborious: its right ear fell, and the right fore-leg was partially paralyzed. In one hour it was indisposed to move; its respiration was slow and laborious; and its right fore-leg in a great degree recovered. Its sensation remained; but its volition was less than before the experiment: it smelt at the food offered, but would not eat it. In three hours, green food was placed in its mouth, which it ate. In five hours, it was running about; but its right ear remained in the same situation. On the following day, its respiration was slow, and it appeared dull. I pressed, with my thumbs, the carotid arteries on each side of the larynx, which was left free. It fell upon its side; it lost all sensation and volition; and its eyes were drawn back. Upon removing the pressure, it soon recovered. On the second day, its respiration was quick; its ear much risen; its fore-leg less paralytic: it sat up; and moved from place to place. A second time I compressed its carotids. Its eyes were drawn back; it was convulsed; and its respiration was quick and laborious; and it was affected in the same way as on the preceding day, but in a less degree. On the third day, its respiration was hurried, and 150. For the third time I compressed its carotids. It fell upon its side, and was insensible; but soon recovered, and ran about. On the fourth day it was dull, and its respiration was laborious: it ate some green food. In the afternoon of this day, it became very dull, and refused the food placed before it; and on the morning of the fifth it was found dead.

I injected this animal with coarse injection: and, upon dissection, it was found that abscesses had formed around the ligatures. The vertebral arteries were fairly tied, and the carotids greatly enlarged, but they were compressed by the abscesses. The injection had entered the cranium by the internal carotids, but not by the vertebrals; nor was there any injection in the basillary artery by the circle of Willis.

Carotid and vertebral tied on the same side.—On another occasion, I tied the carotid and vertebral arteries on the same side; the breathing became laborious, and the fore-leg was partially paralyzed. I subsequently compressed the vessels on the other side, with the usual effect of producing apparent death: but the pressure being removed, the animal recovered; and at the expiration of eighteen

days it was quite well, excepting that it had a difficulty in breathing under excitement. It was then killed and dissected. The arteries had been securely tied. It appears, then, that the obliteration of one carotid and one vertebral, on the same side, does not produce a fatal effect.

Vertebral and carotid arteries tied at the same time.—In order to cut off at once the several currents of blood to the brain, I tied at once both the vertebral and carotid arteries. The animal breathed no more; but there were thirteen or fourteen convulsive contractions of the diaphragm, and convulsions of the hinder extremities, and the animal ceased to exist.

This is a most decisive experiment; shewing the effect of the arrest of the blood in the vessels of the brain, in stopping respiration, volition, and sensation; and the result is striking and immediate.

The same effect of interrupting the streams in the vertebrals and carotids was produced in an equally conspicuous manner, without the application of ligatures, as follows. The animal was held in a convenient position, with its neck extended, and its head thrown back. I then applied my thumbs, so as to compress, at the same time, the two vessels on each side, taking care to leave the trachea entirely free from compression. Respiration ceased in a few seconds: some struggling then took place, and the animal appeared dead. The pressure being then removed, the respiration was completely suspended; but artificial motion being given to the ribs, the animal gasped, began to breathe quickly, and recovered.

I also put a ligature around the neck, close to the sternum, so as to compress the carotid and vertebral arteries; but the trachea was excluded, by passing the ligature behind it. Although the trachea remained free, as soon as the ligature compressed the carotid and vertebral arteries, breathing ceased, and all the functions of the brain were destroyed.

Before I would venture to draw conclusions from the experiments above detailed, I was desirous of convincing myself that no injury done to the nerves could have influenced, in any material degree, effects which had been observed. I proceeded, therefore, to investigate the consequences of applying ligatures to the principal nerves of the neck.

Ligatures placed on the pneumogastric nerves.—In the first place, I put a ligature on each pneumo-gastric nerve. The animal's breathing became heaving and laborious, and fell from 150 to 48 inspirations in the minute: it was likewise accompanied by a stertorous noise: the heart beat feebly, but rapidly; food was refused. These symptoms continued; and on the following morning it was found dead. The same experiment was several times repeated, and the results were nearly uniform, the animals dying at the end of from nineteen to twenty hours.

In these experiments, it was likewise observed that the blood circulating in the arteries gradually assumed the venous colour, and that the animal heat at the same time decreased in a remarkable degree.*

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* These facts were carefully noticed in the following experiments:

EXPERIMENT 1, ON THE RABBIT. Respiration, 132 in a minute: Heat 104.

The pneumo-gastric nerve was tied on each side: the breathing became stertorous? the animal dull, and disinclined to move.

In 1 hour, respiration 48.
3 hours . . . . 44.
4 . . . . . 56. Animal Heat 99½ in the anus.
3 . . . . . 48. . . . . 93½.

I opened the carotid artery, and blood of a venous colour escaped. I tied the artery.

In 11 hours, respiration . . . . . 36. Animal Heat 93
12¼ . . . . . laborious, and 30. . . . . 9' ½ to ¼.
12 . . . respiration the same. . . . . 89.

The rabbit died at this time, and the heat of the abdomen was 88¼.

Examination. Lungs loaded with dark blood: water in each cavity of the pleura: food in the œsophagus: stomach loaded with food.

EXPERIMENT 2. The Pneumo-gastric nerves tied.—Respiration 135 before the experiment. Animal Heat 102.

In 1 hour respiration 48. Animal Heat 99.
3 hours . . . . 39. . . . . 99.—(Stertor, or moaning, under excitement.)
4 . . . . . 33. . . . . 98¼—(The animal dull, and disinclined to move.)
6 . . . . . 36. . . . . 96: cold to the touch.

The examinations after death exhibited the lungs gorged with blood, and looking like the liver; a fluid in the pleuritic cavity; the stomach full of undigested food; and the œsophagus likewise distended with it, in those cases in which the animals had taken food after the ligatures had been applied.

Ligatures placed on the phrenic nerves.—In another rabbit, I divided the phrenic nerves one after the other, in immediate succession.

The diaphragm being then paralyzed, the animal's respiration, which was performed by the intercostal muscles, instantly became excessively laborious. The ribs were heaved violently; and a much greater effect was produced on the respiration than when the vertebral arteries, the pneumo-gastric nerve, or grand-sympathetic, were tied.

In a quarter of an hour it lay upon its side, making great efforts with its intercostal muscles; and sometimes it stopped, as if fatigued, and then again commenced. In twenty minutes it was dead. On examination the phrenic nerves were found to be completely divided.

The heart's action, and the peristaltic motion of the bowels, were observed for a short period after apparent death.

In this experiment, respiration was rendered difficult, by obstruction to the mechanical apparatus destined to provide the necessary supply of fresh air: whereas, in the former, the difficulty arose from the failure of those processes which in health are carried on within the lungs; and may we not thence infer, that the changes of the blood are not chemical alterations merely, but dependent also upon the vital agency of the nerves and blood-vessels?

Ligatures placed on the grand-sympathetic nerves.—I now tied the grand-sympathetic nerve on each side. The respiration became quick and irregular; but sensation and volition were unaffected. The heart's action was very quick: there was a general trembling; but when the animal was put down upon the ground, it ate some greens. Its respiration continued irregular, and its heart's action very quick; and after eight days it was killed. The nerves were found well tied: one had already ulcerated below the ligature; the other was nearly ulcerated through; and the ligature was surrounded by suppuration.

In another rabbit, I tied these nerves; and the animal, although it is near a month ago, is still lively and active.

Ligatures placed on the pneumo-gastric, phrenic, and grand-sympathetic nerves. Lastly, I tied, in one rabbit, the pneumo-gastric nerve, the grand-sympathetic, and the phrenic. The respiration became laborious; the animal dull, and indisposed to move; and the heart's action feeble. The breathing continued excessively laborious for a quarter of an hour, when the animal died. Bloody fluid was found in the chest: the lungs were not much changed. In another similar experiment, the animal died in three-quarters of an hour.

We see, then, that an animal with all these nerves compressed may live from a quarter to three-quarters of an hour; that the ligatures on the pneumo-gastric kill in about twelve hours; and in the grand-sympathetic, that the animal will continue to live for a much longer period: so that pressure on these nerves, in the experiments in which the arteries were compressed by my thumbs, could not have been the cause of death.

The effect of tying the jugular veins of the rabbit is not constantly the same in all cases; as the following instances prove.

Ligatures placed on the jugular veins.—In one rabbit I tied the jugular veins on each side of the neck. When it was set at liberty, it ran about, cleaned its face with its paws, and took green food.

In 12 hours respiration 36. Animal Heat 97½.
14 . . . . . 32. . . . . 95½.
16 . . . . . 28. . . . . 93.
16¾ hours the animal died. Its heat 87 in the abdomen, at the time of its death.
The animal felt cold long before it died.
The gradual decrease of the animal heat, the dark blood circulating in the arteries, and the gorged state of the lungs after the application of a ligature to the par vagum, are interesting and important circumstances: and we are led to question, whether the lungs, by this operation, are deprived of a nervous or vital influence essential to the change of the blood; or whether this change is not produced in consequence of the slowness of the animal's breathing: for when the phrenic nerves have been tied, the blood also becomes dark in the arteries. In that case, however, the lungs are not found gorged by blood.

Its respiration was reduced to 68 inspirations in a minute, which is about half the natural number. After four hours, it ran about as if nothing had happened; and eventually recovered.

When it was killed and injected, I found, on each side, three anastomosing veins passing from the anterior to the posterior part of the jugular vein, and conveying the blood from the head to the heart; but the vertebral vein had remained whole, and become enlarged; and it passed, on the fore part of the vertebræ, from the head to the space between the fourth and fifth cervical vertebræ, where it entered the vertebral canal.

In a second rabbit, I tied the jugular veins on each side of the neck, as before. The animal's respiration became slow; but it ate green food, ran about, and was difficult to catch: but for five days after it appeared dull; its ears had dropped. On the seventh day, it was seen to be convulsed, and frequently rolled over. Its voluntary powers were lost, as well as its sensation, in a great degree. On this day it died. On examination, a clot of blood was found extravasated in the left ventricle of the brain.

Hence it follows, that apoplexy will occasionally result from an obstruction to the return of blood in the jugular veins; and this I have known to happen from enlargement of the glands in the neck of a boy.

Inferences drawn from the foregoing experiments.—It appears, from these experiments, that the carotid arteries are designed in these animals rather for the supply of blood to the external parts of the head than to the brain itself; whilst in proportion as the brain is more developed, the carotid artery acquires greater importance. The obstruction of it influences respiration in some degree; probably, because, under these circumstances, more blood is directed to the vertebral arteries. The internal carotid branches are proportionably less than in those animals which have a large cerebrum, and are endued with higher mental faculties.

It passes to its destination, to prevent the action of the heart from influencing the brain immediately.

The rabbit quickly recovers from the operation of tying these arteries, and seems little affected by it: and in man, as well as in these animals, these vessels are obliterated without the destruction of life.

The vertebral arteries are much more important vessels, as regards the brain and its functions in these animals,* than the carotid arteries. The nervous power is much lessened by tying them; and, in these experiments, the animal did not, in any case, survive the operation more than a fortnight; although I do not mean to say that recovery is impossible. In the dog, also, the carotids may be tied with little effect; but the vertebrals have a great influence.

The effect of the operation is, immediately to render breathing difficult and laborious, from the supply of blood to the phrenic nerves and the whole course of the tactus respiratorius of Sir Charles Bell being stopped. The animal becomes dull, and indisposed to use exertion or to take food.

Very slight injuries, after a ligature has been put upon these arteries, will destroy life; insomuch, that if they are first tied, even dissecting for the carotids, without tying them, will cause death. The best method, in such experiments, is to tie the vertebrals last.

On account of the importance of these vessels, they are securely defended by bone in the greater part of their course; and it is only below the sixth cervical vertebra that they are accessible. If they were exposed to pressure, death would often be suddenly produced.

These arteries are tortuous, to prevent too sudden a rush of blood to the head; and they pass through foramina of bone, which prevents any great increase of their size; although they become somewhat larger than before, when the carotid arteries are tied, and *vice versa*.

Thirdly, compression of the carotid and of the vertebral arteries at the same moment in the rabbit, destroys the nervous functions immediately. This is effected by the application of the thumbs to both sides of the neck, the trachea re-

* Mr. Coleman informs me that the vessels of the horse are different; and he thinks it is designed to counteract gravitation, when the animal is feeding on grass.

maining quite free from the pressure; when respiration entirely ceases, with the exception of a few convulsive grasps.

The same fact is evinced in a clearer and more satisfactory manner, by the application of ligatures on the four vessels, all being tightened at the same instant; when stoppage of respiration and death immediately occur.

When the dog is the subject of this experiment it loses its volition and sensation, and appears as if it were intoxicated; but the anastomosing vessels gradually restore the circulation by means of the other branches of the subclavian artery at the back and sides of the neck.

But, notwithstanding the decisive nature of the last experiment, conceiving that it might be possible that the pressure upon the nerves of the neck might have an influence in killing the animal suddenly, I made the experiments which I have detailed.

I first tried the pneumo-gastric nerves, and found that the animal lived about twelve hours, although it died on the instant when the carotid and vertebral arteries were tied: the lungs were also loaded with blood,* and twice as heavy as the healthy lung: it appears, therefore, that the change of the blood is either directly or indirectly under the influence of the par vagum.

In this experiment it is also to be observed, as a point of much importance, that the blood in the carotid arteries is found of a venous character, and dark blood circulates in the animal for some time before it dies, the blood being less arterial as the time elapses from the application of the ligature: yet the heart continues to beat; for when the artery is opened, the blood flows *per saltum*.

The blood also flows of a dark colour when the carotid is opened after the phrenic has been tied; but the lungs are not in that case found loaded with blood, but possessing their ordinary weight and appearance.

In this experiment there was also a remarkable diminution of animal heat. Is this to be attributed to a cessation of that pulmonary process, accompanied by the evolution of heat wherein venous is converted into arterial blood? or does it arise from a want of that supply of arterial blood to the nerves from which they derive a capability of evolving caloric? or shall we not approach still nearer to the truth, in supposing that both these causes of a high temperature are suspended at the same time; and that there is, consequently, a double reason for the gradual departure of the animal heat observed in this experiment?

The œsophagus contained food, in some instances in which the animal had eaten after the experiment, from its muscles being paralyzed; and the stomach was full, from the arrest of the digestive function.

This nerve, then, is most important; 1st, in assisting in the support of the function of the lungs, by contributing to the changing of the venous into arterial blood: 2ndly, in being necessary to the act of swallowing: 3dly, in being very essential to the digestive process.†

The pair of nerves upon which I next applied ligatures were the phrenics. As soon as these were tied, the most determined asthma was produced; breathing proceeded by means of the intercostal muscles; and the chest was elevated to the utmost by them; and in expiration, the chest was as remarkably drawn in. The animals did not live an hour; but they did not die suddenly, as they do from pressure on the carotid and vertebral arteries. The lungs appeared healthy; but the chest contained more than its natural exhalation.

When the grand-sympathetic was tied, little effect was produced: the animal's heart appeared to beat more quickly and feebly than usual; but of this circumstance I cannot be positively certain, on account of the natural quickness of its action. The animal was kept seven days; and one nerve was ulcerated through, and the other nearly so, at the situation of the ligatures. The suppurative process was extensively set up around the ligatures. No particular alteration of any organ was observed on examination. Another animal still lives in which the sympathetic was tied nearly a month ago.

Lastly, I tied all three nerves on each side the pneumogastric, phrenic, and grand-sympathetic; and the animal lived little more than a quarter of an hour, and died of dyspnœa.

The sudden death, then, that takes place from pressure at the sides of the neck

*Sir Benjamin Brodie has mentioned this state of the lungs.

† A ligature on one nerve only does not destroy.

must not be attributed to an injury to the nerves, but it is owing to the impediment to the due supply of blood to the grand centre of nervous influence.—*Guy's Hospital Reports.* No. III.

PATHOLOGICAL ANATOMY AND GENERAL PATHOLOGY.

7. *Enlargement and vicarious Function of the Stomach.* Professor BLUMENTHAL, of Charlcow (Ukrain Russia) has recorded in the *Wissenchaftliche annalen der gesammten Heilkunde*, a remarkable instance of this observed in a peasant 28 years of age, who died in the clinic of his town in 1835. The organ when filled with water after death was found to hold about 28 quarts (nearly 25 litres.) Its parietes were thickened, and its exterior surface as white as chalk. But what was more remarkable than its great capacity was that it appeared to have performed the function of the liver in secreting bile. This latter organ as well as the spleen were atrophied, and nature seems to have supplied its place by means of the stomach; for during life an enormous quantity of bile was ejected by vomiting, and after death eleven quarts of black bilious matter similar to that which had been vomited was found in the stomach, whilst only a very small quantity of clear bile was found in the contracted gall bladder.—*Gaz. Méd. de Paris*, Sep. 17, 1836.

8. *Minute Crystals observed on the Peritoneum of the Human Subject.*—Dr. ROBERT HARRISON, Professor of Anatomy and Physiology, has given an account in the *Dublin Journal*, for May 1836, of his discovery of numerous minute crystals on certain parts of the peritoneum of the human subject. "It is some time," he says, "since my attention was first accidentally directed to these, by the sensation which they gave to my hand, when removing some of the viscera of the abdomen, in the course of general dissection; I have since met with several examples, in all I should think about five or six, and in these the greatest similarity prevailed. The crystals, though extremely small, are very distinct, they are prismatic and exhibit clear and brilliant facets; before removal from the membrane they appear semi-transparent, not very unlike the colour of the peritoneum itself, hence they are usually detected by the touch rather than by the sight. They are principally to be found in the lower regions of the abdomen: in the first case I met they were in great abundance on the cæcal and iliac portions of the peritoneum; I have since found them in both iliac regions, as also in the inguinal fossæ, also along the course of the colon and the forepart of the rectum, but not on the bladder; I have seen a few on the mesentery, and on the terminating convolutions of the ileum intestine; but in all the examples I have met, they were most abundant in the iliac regions. I have not observed any on the stomach, liver, spleen, or duodenum, or on any part of the peritoneum in the upper regions of the abdomen; in the lower part of the cavity they were not confined to the visceral, though certainly they were more abundant on it than on the parietal portion of the membrane.

I cannot consider this condition of the peritoneum as a morbid one, although I believe it to be very unusual; in all those cases in which it had existed, the various contents of the abdomen appeared perfectly normal, so that I could not connect the presence of these crystals even with the coincidence of any diseased structure. In general, indeed I almost think always, I have found them in the bodies of females; the subjects were all apparently far advanced in years and much emaciated; in one case, the first I met, there was some serous fluid, about a quart, in the cavity of the abdomen: this at first led me to indulge in the speculation that this peculiar matter might have been a crystalline deposit from this fluid; an idea, however, which further experience and closer observation proved to be untenable, as in a short time afterwards I met with the same appearance in the abdomen where the surface of the peritoneum was unusually dry. On a careful examination, too, of these crystals, I found that they were not loose and unattached, so as to admit of being rubbed off, but, on the contrary, they were set very close together, and were intimately connected to the membrane by a very fine but still a resisting film, or a sort of albuminous pellicle, which was continued from the peritoneum over the base of the crystal, on which it was imperceptibly

lost; one might have almost fancied that these little crystalline prisms were impacted in the extremities of the exhalent vessels. In order to detach any of them it was necessary to scrape them off with the knife; on their removal, however, no orifices were observable in the membrane, and the latter appeared in a state of integrity, and free from any abrasion. When these crystals were removed and washed, they became perfectly transparent, their prismatic form and polished surfaces were then also very apparent. Having collected a sufficient quantity of them, I requested my friend Dr. Apjohn, Professor of Chemistry in the College of Surgeons, to submit them to analysis, the general result of which he has been so kind as to communicate to me.

Dr. Apjohn says, "the crystals being pulverized, were treated with caustic potash, which caused the evolution of ammoniacal gas, and left a flocculent precipitate, which, upon examination, proved to be magnesia. The alkaline solution, neutralized by acetic acid, gave with muriate of lime a white precipitate, insoluble in water, but soluble, without effervescence, in the muriatic and nitric acids. From these experiments it is obvious that the crystals were composed of phosphoric acid, ammonia, and magnesia." From this statement we may be disposed to consider these crystalline deposits of the ammoniaco-magnesian phosphate as somewhat analogous to what we more frequently meet with in the urinary passages, and which depositions are more prone to occur in very advanced life, indicating as it were, a sort of partial decomposition of the animal frame preceding its general dissolution. I shall not, however, at present attempt to speculate as to the proximate cause of these depositions, but shall only remark on the fact of their being, so far as we can yet learn, confined to the peritoneal or serous membrane of the abdominal cavity; I have never seen them in the pleuræ or in the pericardium; I once, and only once, met with a very slight trace of the same formation on that portion of the arachnoid membrane which covers in a very loose manner the cerebral protuberance or pons varolii, but the crystals were not in sufficient quantity to enable me to institute an accurate comparison. Finally, I may add that a short time since, when examining the head of a child about seven years of age who had died of hydrocephalus, and in which the arachnoid membrane on the inferior surface of the medulla oblongata was inflamed and thickened from tubercular deposit, I detected a small patch of the membrane to be in a very rough condition; this, on close examination, I perceived was partly owing to the presence of very distinct small short crystals of a brownish colour and which were intimately adherent to this diseased and thickened membrane; the quantity of these, however, was so very small, and the parts were so much disturbed and injured by the examination, that I was not able to institute any more accurate investigation as to their nature and properties; from their general appearance, however, as well as from all the concomitant circumstances, I should consider these as a totally different product from that which I have first described as found in the peritoneum.

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9. *On the Occurrence of Crystals in the Intestinal Canal in Cases of Abdominal Typhus.* Professor SCHŒNLEIN of Zurich, in a letter to Professor MULLER states that while engaged in some researches on typhus abdominalis, for which a slight autumnal epidemic afforded sufficient materials, I have discovered some new facts, one of which I communicate to you, with a request, that you would be pleased to institute inquiries, with the view of confirming or extending it, in some of your large Berlin Hospitals, where examples of the disease are always to be met with.

"In the alvine evacuations of patients labouring under typhus abdominalis, a great number of microscopic crystals are observable; the forms of which I communicate in the accompanying sketch. Fig. 3 (a combination of a rhomboid prism, a rectangular pyramid, and a rectangular prism,) and Fig. 10 (a combination of a rhomboid prism, of a rhomboid pyramid, and of a rectangular prism), occur most frequently. Fig. 11 and 12 are aggregations of crystals (chiefly of the two foregoing descriptions) lying in the matter, for the crystals, without doubt, form in the yellow matter with which the excrescences of the intestinal mucous membrane (the pretended ulceration of Peyer's glands) are covered. I would be anxious to learn, whether you will find a larger number of crystals in Berlin, as those which I have figured were taken from about a dozen patients here. The

crystals are in other respects quite clear and transparent, very friable, soluble in muriatic and nitric acids without effervescence, and, as far as a cursory analysis goes, composed chiefly of phosphate of lime, with some sulphate of lime, and a salt of soda.

"The discovery of a peculiar system of crystals, formed during the morbid processes which accompany typhus, enlarges the circle of pathological processes, in a manner so much more pleasing to me, as by means of this new link in the chain of processes connected with the formation of crystals, it exhibits in a novel point of view the relation of the latter to the former, of which the characteristic and distinguishing marks are the formation of epi-and entoza, epi-and entophytes."

In a second communication, dated April 15th, 1836, Professor Schœnlein observes:—

"The cases of typhus abdominalis which still present themselves from time to time, have enabled me to continue my researches on crystals occurring in the intestinal canal, and have so constantly shewn the presence of these bodies, that the fact may be fairly employed as an important diagnostic between typhus abdominalis, and febris gastrica, and erysipelatosa, diseases which are related to typhus, bear to it a deceitful resemblance, occur cotemporaneously, and are also accompanied by copious alvine evacuations, in which, however, a minute examination fails to detect crystals, just as in the excrements of persons recovering from typhus.

"In various kinds of diarrhœa, as that which accompanies ulceration of the bowels in phthisis, and in the ordinary diarrhœa of healthy persons, these crystals cannot be discovered, although I, and some of my friends, have made hundreds of examinations, in some cases for weeks together.

"I am not as yet accurately acquainted with the form and chemical composition of these crystals; on both these points much still remains to be cleared up. Thus, Fig. 3, which is the form most frequently met with, appears to be merely the half of a crystal divided by a section which ran parallel to one of its sides. With respect to its chemical relations, it is remarkable that the shape differs from the primitive form of the crystals of phosphate of lime; to which may be added, the circumstance that the crystals of typhus are soluble not only in muriatic and nitric acids, but also in sulphuric acid with facility. Can phosphate of lime be a dimorphous substance? In this case the dimorphism would be (curiously enough) dependent here on the formative impulse; one form belonging to the mineral, the other to the animal processes of formation. I wish you would procure an accurate analysis of these crystals from some of your celebrated Berlin chemists."

On the foregoing communication Professor Müller remarks:

"At the time I received the first letter, typhus abdominalis was of such rare occurrence in our hospitals, that for a considerable time I could not meet with a pure case, that is to say with ulcerations of the ileum. Under these circumstances, it appeared to me the best course, to make some preliminary observations on the excrements in other diseases, and with this view I made a diligent microscopic examination of the excrements found in the bodies at the anatomical theatre. Professor Ehrenberg had long before discovered that meconium contains miscroscopic crystals, and I concluded from this, that similar crystals might probably be met with in the dead bodies of adults. In the excrements of adults, we have, after long searching, often found here a few scattered crystals, and these, I may observe, occurred in men who died of various diseases. Among them was a case of what has been termed nervous fever, without ulceration of the intestines, and another in which there were ulcers in the great intestine, but not in the ileum. The other cases had not the slightest connexion with typhus. The crystals, which were very few and scattered, were partly visible with the naked eye, and partly required to be examined with the microscope. We frequently observed rectangular tables, occasionally a rhomboid or rather rhombic prism; and in one instance, long four-sided prisms with quadrilateral pyramids at each end. We never met with aggregations of crystals adhering together as represented by Professor Schœnlein. In the non-typhoid cases, we have frequently sought for crystals in vain.

"Subsequently, I had an opportunity of examining the excrements of patients

who had been treated for typhus, and on one occasion, the excrements of a patient who died of typhus abdominalis with ulceration of the ileum. Although in these cases we did not meet with the crystals in a remarkably larger quantity, we do not lay much weight on the circumstance. In the dead bodies of patients who laboured under very different diseases, crystals may be found, which cannot be detected in the fresh excrements. But from the renewed observations of Professor Schœnlein, it appears, that crystals occur more frequently in the alvine evacuations of typhus than in any other kind of excrements."

10. *Cholesterine from an abscess.*—M. Lassaigne observed, that an abscess on his leg, which had burst, and discharged a bloody puriform matter, when dried was covered with small scales, like those of a fish. These scales possessed all the properties of cholesterine, being soft, soluble in hot alcohol, and melting at a high temperature. M. Caventou, in 1825, detected cholesterine in the pus discharged from an abscess above the malar bone.—*Journ. de Chim. Méd.* Nov., 1836.

11. *Remarkable instance of Deformity of the Pelvis.*—Professor Naegele of Heidelberg, recently presented to Dr. Montgomery of Dublin, a cast of the pelvis of a woman who was perfectly well formed, and gave birth to five full grown healthy children with the greatest facility. But being unfortunately attacked with malacosteon, and becoming again pregnant, at the close of gestation the pelvis was found so contracted as to leave no possibility of delivery except by the Cæsarean operation, from the effects of which the woman died, and the pelvis was found to present the greatest degree of contraction that has ever been known to require the interference of art.

In the dry preparation the distance between the promontory of the sacrum and the ramus of the pubes, is scarcely a quarter of an inch, so that when covered by the soft parts, these points must have been in contact. The greatest antero-posterior diameter at either side is only an inch and a quarter, and during life could not have exceeded an inch; the sacrum is bent in so as to form a right angle, and the ilia are folded or doubled in upon themselves, like softened pasteboard. Professor N. considers it "the most perfect specimen of contraction of the kind which has ever been made known to the profession."—*Dublin Journal*, Jan. 1837.

MATERICA MEDICA AND GENERAL THERAPEUTICS.

12. *Physiological action of Iodine and Hydriodic Acid.* By Andrew Buchanan, M. D.—The effects of iodine on the animal economy have not been discriminated with sufficient care from those of hydriodic acid, although the two substances, considered as physiological agents, are just as distinct as chlorine and muriatic acid.

The physiological effects of iodine are exceedingly similar to those of chlorine. It acts as a corrosive irritant, exciting inflammation and combining chemically with the tissues to which it is applied. This simple local action is all that, strictly speaking, can be ascribed to iodine, for there is not the least reason to suppose that it is ever absorbed and mingled with the circulating fluids in the uncombined state. The other effects which have been ascribed to iodine are either those of hydriodic acid, or they are secondary effects arising from the inflamed or ulcerated state of the alimentary canal,—which the iodine has produced. To the latter series of effects must be referred the whole of the fearful train of symptoms which have been described by toxicologists under the name of *iodism*, and have been attributed, but most erroneously, to the slow accumulation of the poison in the body. This conclusion appears to me to be fully warranted by considering, that while such symptoms have been observed to result from the use of iodine in forms capable of exciting local irritation, it has been ascertained by numerous trials made in the hospital and out of it, as well by myself as by various medical friends who have done me the favour to state the result of their observations, that no such symptoms result from the use of iodine divested by starch of its local irritant power. Many of the symptoms, too, which have been described, such as indigestion, pains of the stomach and bowels, emaciation, and febrile excitement,

are of a kind very likely to result from gastro-intestinal irritation; and with respect to the rest of them it is difficult not to entertain a suspicion that some of them at least may have been admitted as effects of iodine from inaccurate observations. However that may be, I can only say, that I have never seen the use of iodine followed by wasting of the testicles or of the mammæ, by palpitations, faintness, excessive debility, hurried, anxious breathing, dinginess of the skin, copious clammy sweats, increased menstrual discharge, or an oily appearance of the urine, which are enumerated among the symptoms characterizing the supposed affection termed iodism. Some of the symptoms described, indeed—such as bilious diarrhœa, and a diminished secretion of the saliva, are the very reverse of the effects which I have usually observed to flow from the use of the preparations of iodine.

I go on to speak of the effects of hydriodic acid, which I think it does not admit of doubt ought to be regarded as the true medicinal agent, possessing the alterant virtues which have been ascribed to iodine itself. The hydriodic acid, in the concentrated state, is most probably, like the muriatic, a corrosive irritant, but by dilution with water it is completely divested of its irritant quality. In the diluted state, however, it is probably not without a local action on the alimentary canal. Most probably it acts as a tonic. At all events the analogy of the other mineral acids, in which tonic virtues are so generally recognised, warrants the opinion, as at least probable, that it is to the hydriodic acid that ought to be referred the tonic effects which so many observers have described as resulting from the use of iodine.

The hydriodic acid, whether prepared within the body or introduced ready made, is an exceedingly absorbable substance. When given in doses equivalent to ʒij. of iodine daily, the whole of it appeared to be taken up and mingled with the circulating fluids. What are the fluids with which it mingles, and the secretions by which it is discharged? I have already mentioned, that when hydriodate of potass is given in a dose of ʒij., iodine is found abundantly in the blood in from four to six hours afterwards. I must also, however, mention, that when iodine is given in smaller doses, although the use of it be continued for a great length of time, no iodine can be detected in the blood on the most careful examination. Mr. Lumsden, to whose kindness and analytical skill I have to acknowledge my obligations, examined both the serum and crassamentum in several patients taking iodine in full doses, and in many of whose secretions it was contained in abundance, without being able to detect any trace of it. How to explain these facts I do not know, unless we are to suppose that iodine does not find its way into the sanguiferous system unless when given in such a quantity at once that the system is completely deluged with it; but that when given in smaller quantities it is not admitted by the extremities of the veins, and is transmitted along the capillary vessels in a way which we do not at present understand. It will be seen immediately that the vessels of certain excretories appear to possess a similar power of rejection over this substance. I have already mentioned, that after giving a full dose of the iodide of potassium, iodine was detected in abundance in the serum exhaled into the serous cavities, and in the synovia of the knee-joint. Of the secretions, it was in the urine that iodine was always detected in greatest abundance. It appeared in the urine about four hours after the first dose was taken, and continued to be detected in it for four days after the last dose was taken. In one or two instances it was found on the fifth and even on the sixth day after. It continued to be observed for the same length of time whether the iodine was given in one large dose, or the body had been gradually impregnated with it. Next to the urine it was in the saliva that the iodine was most abundantly found. It was found also invariably in the tears, and in the mucus of the nose, although in the latter case it was impossible to determine whether it was really secreted by the schneiderian membrane, or came down from the lachrymal gland. Iodine was found also in the milk, but it existed in that secretion in a very small proportion compared with that in which it was found to exist simultaneously in the urine and saliva. Iodine was also found in examining the mucus secreted from the lungs in chronic bronchitis, but it was difficult to determine whether its presence was not owing to an admixture of saliva.

While the hydriodic acid is thus widely diffused over the body, it would be to generalise too hastily to infer that it exists in all the animal fluids. I have already

mentioned, that it is only in certain circumstances that it is to be found in the blood, and there are certain secretions the vessels preparing which appear constantly to reject it. At all events in none of the trials made could any portion of iodine be detected in them. Of these secretions or exhalations the first to be mentioned is the perspiration. I am aware that iodine is said to have been found in the perspiration, but I can only say, that in experiments carefully made and frequently repeated upon patients taking iodine in very large doses, and whose urine and saliva became as black as ink on being tested in the usual way, not the slightest trace of iodine could be detected in the perspiration. The perspiratory fluid examined in these experiments was forced out by the use of diaphoretics, or was collected from the forehead of the patient in the hot bath. At the same time the water of the bath itself in which the patient was immersed, was examined, but with no better success. It may, therefore, I think, be confidently affirmed, that iodine is very rarely, if ever, present in the perspiration. Another fluid, in which I very early looked for iodine, and fully expected to find it, was the purulent matter secreted from sores, for the cure of which iodine was exhibited, but in none of very numerous experiments made on patients fully saturated with iodine, could the slightest tinge of the medicine ever be perceived in the purulent discharges. The absence of iodine from the discharges from the skin, and from ulcerated surfaces, is rendered the more remarkable by its efficacy in the cure of cutaneous diseases, and various forms of ulceration. I have only to add further, that in one or two experiments, iodine was not found present in the serous fluid of blisters.

The whole of the hydriodic acid introduced into the body is discharged along with the urine, with the exception of the very small proportion of it contained in the rejected saliva and mucus of the nose, and milk, when that secretion is going on in the female. The greater part of the saliva being swallowed, the iodine contained in it must be absorbed a second time from the stomach and bowels. A similar reabsorption must take place of the iodine contained in the exhalations that are reabsorbed by the surfaces which effuse them. Thus, after describing many circuits, in various directions, through the body, nearly the whole iodine introduced comes ultimately to be discharged with the urine. The time occupied in this circuitous passage of the iodine is, as has been already remarked, generally four days.

Iodide of potassium is absorbed very readily from the skin: it is found in the urine just as when it is introduced into the stomach, but much less speedily.

With respect to the influence of the preparations of iodine we are here considering over the organs of digestion and assimilation, that influence was, to say the least of it, certainly not of an unpropitious kind; on the contrary, in patients employing these medicines in full doses, the tongue was almost invariably free from fur, and of a healthy red colour; the appetite and digestion were good, and in many instances there was a most obvious improvement in *condition*. Of the two great alterant medicines we possess, iodine and mercury, it is certainly a most important advantage of the former over the latter that it admits of being given freely, not only without injury, but with advantage to the general health; while mercury, given in full doses, is always a dangerous medicine, and often the means of doing irreparable injury to the constitution. The iodide of starch frequently caused costiveness, attended with griping pains of the bowels; and, as was observed in many instances, with a paleness, approaching to a clay colour, of the alvine discharges.

These effects I was inclined to refer to the large quantity of hydriodic acid generated in the stomach, abstracting the free soda from the bile, and probably otherwise modifying its qualities, besides, perhaps, exerting a direct astringent action on the bowels themselves. The occurrence of these symptoms required the use of a laxative. In some cases, but very rarely, the iodide of starch produced the opposite effect of causing purging. In persons of weak digestion, it was often necessary either to give up the medicine altogether, or at least to diminish the dose of it, owing to the occurrence of pain in the stomach. It is possible that the conversion of iodine into hydriodic acid requires a certain vigour of digestion; and if so, the pain occurring in such cases may have been owing to the imperfect mode in which the process of conversion was carried on.

A question has of late been agitated—Whether iodine ever causes salivation?

It does not, according to my observations, generally do so; but that it does so occasionally, I think there can be no doubt. In a man who had taken 2864 grains of iodine in the course of 42 days, in the form of iodide of starch, the medicine required to be given up on account of salivation, which was as profuse as I ever saw caused by mercury, and attended with swelling of the face and ulceration of the inner membrane of the mouth. It only differed from a mercurial salivation in being much less obstinate, going off as soon as the iodine disappeared from the saliva. I never saw this symptom occur to the same extent in any other case, but I have repeatedly seen it in a less degree. The man in whom it took place had been frequently salivated with mercury on previous occasions.

In several cases the pulse was accelerated when the system was impregnated with iodine; in many other cases no acceleration could be perceived. Upon the whole, one of the most remarkable circumstances attending the use of this medicine was the absence of symptoms produced by it. Patients who took the largest doses went about, and took their food, just as usual; so that had it not been for the peculiar chemical condition of their secretions, and in many instances the rapid disappearance of their diseases, it would not have been supposed they were taking medicine at all.

With respect to the relative efficacy as medicines of the iodide of starch, hydriodic acid, and iodide of potassium, I am inclined to place them in the order in which they have just been enumerated; although I must admit that the superiority which I ascribe to the first is perhaps owing to my having prescribed it most frequently. The action of all of them, however, is very similar. The only mode of explaining the similarity of action on the body of substances so dissimilar in nature, is by considering the hydriodic acid as the active principle, producing the physiological and therapeutical effects usually ascribed to iodine. It has been already stated, that free iodine is immediately converted in the stomach into hydriodic acid. As to the hydriodate of potass, it is clear that in its passage through the body the muriate and phosphoric acids must lay hold of the potass, so that the hydriodic acid will combine with the weaker bases, the soda and lime, and thus pervade the system nearly in the same state as when free hydriodic acid itself is employed. The presence of the potass, however, must produce an important difference in the action of the hydriodate, which I have no doubt a more attentive observation will hereafter enable us to discriminate.

If the hydriodic acid be the active principle to which the alterant virtues ascribed to the preparations of iodine are to be attributed, analogy will lead us to range those preparations in the series of medicinal agents along with the muriatic, the sulphuric, the nitric, and other mineral acids,—all of which have been held to possess alterant virtues, and have been used on that account in syphilis and other diseases; and the great success which has attended the use of the hydriodic acid may serve as an inducement to try the other mineral acids more extensively, and in fuller doses, than they are commonly prescribed.—*Med. Gaz.* July 2, 1836.

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13. *On the Therapeutic value of extracts of the Solanea containing Green Fecula.* By MM. Martin-Solon and Souberain.—Extracts prepared from juices which have not been purified, and containing consequently the green fecula of the plants, have been recommended by Störck, and generally considered as useful medicines. In the greater number of plants, what is improperly called green fecula consists of a mixture of chlorophyle, of coagulated gluten, and of the debris of tissue,—substances of no medicinal value; but it would be wrong to conclude on this account that the green fecula of *all* plants is useless: it, however, may be doubted whether the opinion of those pharmacologists is correct who consider this fecula as the only active part of this family of plants, and do not hesitate to substitute it for the extract itself. MM. M. and S. have made experiments on the properties of the green fecula of belladonna, hyoscyamus, and stramonium, in order to determine whether it is a necessary ingredient in the common extracts, or if it could be separated without injuring their virtues. The experiments were made with two kinds of green fecula: the first, which may be called the insoluble matter of the juices, is that which is held in suspension after the tissue of the plant has been broken down, and been submitted to expression. It was collected by filtering the juice, and purified by several washings. The second kind, which is called green fecula, obtained by coagulation, is procured from the filtered juice after it has

been heated. It contains, in addition to the ingredients composing the first species, albumen which is coagulated by the heat, and some matters entangled by the albumen during coagulation. In order to divide the doses equally, the fecula was, when still moist, mixed with sugar, and then dried in a stove.

Insoluble Green Matter of Belladonna. This was given to two patients: the first was a woman of sixty, with catarrh and chronic gastritis; one grain was given the first day, and the dose increased one grain daily. On the tenth day, the patient complained of muscæ volitantes: the dose was increased to fourteen grains without its producing any peculiar symptom whatever. The second patient was a woman, æt. thirty-two, convalescent from articular rheumatism: the dose was gradually increased to twenty grains, and no effect produced.

Green Fecula of Belladonna obtained by Coagulation. The first patient was a woman, æt. twenty, affected with rheumatic pains. Two grains were given at first, and the dose increased two grains daily. At fourteen grains, she complained of pain in the throat; she slept well, but dreamed more than usual, and had occasional spasms of the legs. When the dose was sixteen grains, she suffered much from her throat; her dreams were sad and frightful; her head heavy, pupils dilated, pulse regular; no rheumatic pains. The medicine was discontinued, and on the following day these symptoms entirely disappeared. The second patient was a phthisical young man of twenty: on taking twenty grains, he complained that his sleep was less tranquil than usual; no other symptom. In a third patient, æt. forty-four, phthisical, pain in the throat was complained of after taking ten grains; after fourteen, the pain increased, with slight headach; after sixteen, there was slight trembling of the hands, but the sleep was quiet. This tremor increased on augmenting the dose, and the medicine was discontinued.

Insoluble Green Fecula of Hyoscyamus niger. One trial was made in a young man, æt. twenty-two, convalescent from pneumonia. After taking twelve grains, he found some weakness of vision; his sleep was a little agitated.

Green Fecula of Hyoscyamus obtained by Coagulation. The patient was affected with habitual headach: dose augmented daily two grains. After taking ten grains, his sleep was disturbed; after fourteen grains, he slept more, but he complained of uneasiness in his legs; eighteen grains produced nausea, heaviness of the head, sleep disturbed by dreams. The medicine was omitted, and the day afterwards these symptoms ceased.

Green Fecula of Stramonium. Both kinds were given to the patients, and the dose carried to twenty grains, without any effect.

From these experiments, it may be doubted whether the green fecula which is left in the extracts of the plants with the juice can add to their efficacy: indeed, it is a question whether their activity may not be impaired by the mixture of the active principle with so much inert matter. It is not unreasonable to conclude, that the slight effects in some of the experiments were owing to a part of the soluble principles of the juices remaining mixed with the green fecula, particularly as the coagulated fecula was the most active, which was washed with less effect. These experiments, however, are not sufficient to decide the question. Störck prepared his extracts with a heat so gentle as not to injure the juices, instead of evaporating them, as was the general custom, by prolonged ebullition, to the great injury of their active ingredients. This may account for the success he and others experienced.—*B. & F. Med. Rev.* Jan. 7, 1837, from *Bull. Gen. de Thérap.* Feb. 7, 1836.

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14. *Hydriodic Acid.*—Dr. Andrew Buchanan gives the following formula as that according to which the liquid hydriodic acid is prepared in the Glasgow Royal Infirmary; ℞ Iodidi Potassii, grs. 330, Acidi Tartarici, grs. 264.

Solvantur seorsim in Aquæ destillatæ, ℥iss. Misceantur solutiones et quum subsederit Bitartras Potassæ cola. Colato adde aquæ quantum sufficiat ut sint totius liquoris drachmæ quinquaginta, 3L. = ℥vi. 3ij.

Acidum hoc Hydriodicum liquidum, habet Iodinii, gr. v., in singulis drachmis.

It is a fact well known to physiologists, says Dr. B., that when free iodine is introduced into the stomach, it is speedily converted into hydriodic acid. This conversion is probably effected differently in different cases. If a large quantity of uncombined iodine be swallowed when the stomach is empty, the hydrogen with which it combines may be furnished in part by the gastric juices, but it can

scarcely be doubted that it is chiefly supplied from the tissues of the stomach itself, which undergo corrosion. When, however, the iodine is given in combination with starch, it is probable that the starch, while under digestion, furnishes the hydrogen which goes to form the hydriodic acid, and in this way the starch defends the tissues of the stomach from the corrosive action which they would otherwise undergo. It appeared to me, however, that it would be well to save the stomach the labour of preparing the hydriodic acid, by giving, for the purposes of medicine, not free iodine, but the hydriodic acid itself.

I was the more inclined to make this experiment, as it would enable us to determine, from direct evidence, whether the opinion, rendered so probable by general reasoning, be also borne out by experience, that hydriodic acid closely resembles iodine in its effects upon the body, and is in reality the active principle to which the ordinary preparations of iodine owe their medicinal efficacy. The trials made of the hydriodic acid as a medicine fully realized the expectations entertained of it.

The processes recommended in works upon chemistry for forming hydriodic acid are not well adapted for the purposes of medicine, both on account of their complexity, and because they do not yield an acid of which the strength is uniform and easily estimated. The strong mineral acids cannot be employed in decomposing the iodides to form hydriodic acid, as is done in forming muriatic acid from common salt, because those acids re-act on the hydriodic acid as it is generated. The tartaric acid, however, is not liable to the same objection; and I found on trying the experiment of treating iodide of potassium with tartaric acid, in the proportions necessary to form cream of tartar, that hydriodic acid was readily obtained in a state of sufficient purity for the purposes of medicine, although holding some cream of tartar in solution. To diminish as much as possible the quantity of cream of tartar dissolved, the acid and salts are each dissolved in a very small quantity of water, the rest of the water not being added till the precipitated cream of tartar has been removed by filtering. The liquid acid thus obtained has an agreeable sourness. It is at first limpid, or with only a slight yellow tinge; but as happens to this acid, in whatever way prepared, on being kept it soon assumes first a wine yellow, and next a beautiful red colour, from a portion of the acid undergoing decomposition, while the iodine disengaged is dissolved in the rest of the acid. It has been ascertained that this process of decomposition may go on till one-half of the acid is decomposed, when the colour of the liquid is a very dark red, approaching to black. The diluted acid, however, prepared as above, may be kept many months without at all approaching this limit.

The liquid hydriodic acid thus prepared I first tried as a medicine in the dose of a few drops. That dose was gradually increased to 3j. three times a day, equivalent to gr. xv. of iodine, and at length to ℥ss. three times a day, equivalent to 5j. of iodine. This last was the ordinary dose in which I exhibited the medicine, although I have given as much of it as ℥j. three times a day, or 3ij. of iodine daily. The acidity of this medicine renders it one of the most agreeable preparations of iodine. The results obtained from numerous trials of its effects were—1st, That the hydriodic acid, if pure (by which I mean, not holding iodine in solution), has no local irritant action if sufficiently diluted. 2nd, That it is absorbed, and pervades the tissues of the body, and comes out with the secretions in the very same way as when free iodine is exhibited. 3d, That its therapeutical virtues are like those of free iodine.

The pure liquid hydriodic acid, having no irritant action unless in a state of concentration, may be safely given in water as a vehicle. When, however, the acid has undergone decomposition, the iodine dissolved renders it irritant, forming a preparation perfectly analogous to Lugol's solution, of which it has been already stated that only a small dose can be given without inducing symptoms of gastric irritation. I always, therefore, adopted the precaution of giving hydriodic acid in a solution of starch as a vehicle. But for this precaution, owing to the great proneness of the acid to undergo decomposition, it would prove a very dangerous medicine for continued use. By using the starch as a vehicle, however, it is rendered perfectly safe, for the iodine of the decomposed acid combines with the starch, and thus the portion of the medicine which is not given as hydriodic acid is given in the equally innocuous and efficacious form of iodide of starch. Neither is it necessary, in prescribing, to make any allowance for changes in the

strength of the acid from decomposition, for the part of it which has been decomposed is immediately reconverted into hydriodic acid on being introduced into the stomach.—*London Med. Gaz., July* 2, 1836.

15. *Iodide of Potassium.*—Dr. Buchanan says he has given this substance in doses of half an ounce, and the only precaution he observed was to make the patient drink freely of diluents. "No pain of the stomach or bowels was," he says, "produced, and the medicine never in the least degree operated as a purgative, but seemed to be altogether absorbed, and was discharged chiefly by the kidneys.

As the iodide of potassium is very often adulterated, it is necessary, to prevent any suspicions from arising in the mind of the reader as to the purity of the medicine employed, to state, that the iodide of potassium used in the Glasgow Infirmary is prepared under the direction of a most able chemist, within the walls of the hospital, where there can be no motive to adulterate it.

It was not merely for the purpose of determining the dose of the hydriodate of potash that these large quantities of it were given. I found that to give it in such doses was the readiest mode of determining certain physiological questions with respect to the diffusion of this medicine over the body; for so large a quantity of it being at once introduced into the system, every fluid into which it is permitted to enter is at once impregnated with it. It is in this way that it is most easily detected in the blood. Two drachms of it were given to a young man affected with gonorrhœa, and as soon as the medicine made its appearance in the urine, which was four hours afterwards, blood was drawn from his arm. On examining the blood, both the serum and crassamentum were found deeply impregnated with iodine. The same dose was given to a boy affected with dropsy of the knee-joint, from which it had been resolved to draw off the fluid. About five hours after the dose had been taken, a very small puncture was made into the joint, and upwards of twelve ounces of synovia drawn off by the cupping-glass. The synovia contained iodine in abundance. To an old man who had one of the largest hydroceles I ever saw, two drachms of the hydriodate of potass were given over night, and the same quantity the following morning. On tapping him some hours after he had taken the last dose, fully more than thirty ounces of serum were discharged, containing a large quantity of iodine.—*Ibid.*

16. *Results of experiments with Kreosote.*—Dr. J. Corneliani, Professor of Internal clinic in the University of Pavia, has investigated the powers of the kreosote experimentally, both in his clinic and on several species of animals. He has employed it, internally, endermically, and finally by injection into the veins; and has varied the dose from the smallest to the highest. The following are his results:

1. Kreosote taken internally, in a large dose, may produce instantaneous death, without any organic lesion being observed on post mortem examination, if made immediately.

2. When pure or very slightly diluted kreosote is applied directly to a larger nerve, as the par vaguum, or it is injected into a vein even in small quantity, death instantly follows.

3. If the quantity is not sufficient to produce death, it causes prostration of the muscular and nervous systems; and symptoms of paralysis of the extremities, heart, diaphragm and organs of the senses, which leads to the belief that the kreosote acts like the narcotic debilitants, among which it should be arranged.

4. Although no antidote has yet been indicated against its toxicological effects, it appears that general stimulants are indicated, unless it has acted upon the stomach, in that case the debilitants, and especially narcotics, as the prussic acid, increase its fatal effects.

5. The kreosote also exerts more or less active mechanico-chemical action, on the gastro-enteritic mucous membrane, which gives rise to various organic lesions met with in the dead body, and to chronic gastro-enteritis in which persons are subject who make use of this article for a long period.

6. To counteract this mechanico-chemical effect produced by the kreosote taken internally, oleaginous and mucilaginous drinks should be administered. Vinegar being an excellent solvent of this substance—prevents its deleterious effects by favouring its contact with the nervous papillæ of the stomach.

7. In general patients cannot bear a larger dose than two drops, repeated four or six times in the 24 hours.

8. Kreosote taken internally, may be useful in diabetes mellitus, polydipsia, hemoptysis, chronic catarrh, diarrhœa, palpitations of the heart, inflammatory fevers (*angiotenies*) and perhaps also in tetanus.

9. A singular effect of the kreosote taken internally appears to be its prompt action on the urinary organs; for the animal experimented on, urinated as soon as he took it. Dr. Corneliani ascribes this to the paralysis it causes, especially of the neck of the bladder.

10. The application of kreosote to the exterior in chronic inflammations of the skin, and especially in herpes (dartres), itch, chronic psoriasis, may be often useful, whether its action is drying, antiphlogistic or insecticide.

11. If the kreosote used externally is not applied to a large surface or upon important nervous branches, it produces no alteration of the organs, even of those upon which it more especially acts, as the spinal marrow, the brain and the kidnies. Dr. Corneliani has however observed that in phthisical patients, the inspiration of the kreosote may give rise to prostration of the intellectual functions and muscular movements.

13. If the external employment of the kreosote does not arrest venous hemorrhage, at least that of a large vein, as the femoral of a sheep, it is efficacious in hemorrhage from an artery of moderate size.—*Journ. de Chimie Médicale*, Feb. 1836.

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17. *Iodide of Starch.*—Dr. Andrew Buchanan, Junior Surgeon to the Glasgow Royal Infirmary, in a communication in the *London Medical Gazette* (2 July, 1836) extols this preparation of iodine, which he prepares in the following manner:—℞. Iodine gr. xxiv; Amyli in pulveren tenuissimum triti ʒj. The iodine is first triturated into a little water, and the starch gradually added, the trituration being continued till the compound assumes a uniform blue colour. The iodide is then dried with a heat so gentle as not to drive off the iodine, and it must be afterwards kept in a well stopped bottle.

The iodine, in the usual forms of exhibition, cannot in general be safely given in larger doses than four or six grains daily; whilst in the above formula Dr. Buchanan has given as much as 72 grains daily. Dr. Buchanan is in the habit, in persons not labouring under dyspepsia or constitutional delicacy of habit, and whom he wished to put under the influence of iodine, of commencing with the iodide of starch in doses of half an ounce three times a day, and increasing it immediately afterwards to ounce doses if necessary. "As there is no great reason," he observes, "for nicely apportioning the doses, a heaped tea-spoonful, dessert-spoonful, or table-spoonful are convenient enough measures for smaller quantities in private practice. I have always directed the medicine to be taken in a draught of water gruel."

It might rationally enough be supposed from the large doses in which the medicine is administered by Dr. Buchanan, that it is an inert preparation, but such seems not to be the case, as Dr. B. has detected the iodine abundantly in the secretions, showing it to be absorbed; and has been unable to detect any traces of it in the stools of patients taking it in large doses. It certainly must exert a less irritant action on the alimentary canal than the other preparations of iodine, but it may be a question whether it will be possible to induce patients to persevere in a medicine requiring to be given in such large doses, making a meal rather than a medicine!

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18. *Action of Acetate of Lead upon Animal matter.*—Dr. C. G. Mitscherlich has instituted a series of experiments on this subject, the results of which are of the highest value in therapeutics. As soon as acetate of lead in solution comes in contact with animal matter, new compounds are formed, which contain lead and an organic substance. Some of these compounds are soluble in water; others can be rendered soluble by the addition of a small quantity of acetic acid, lactic acid, or chlorohydric acid, while others are quite insoluble in water and in acids. As most of the compounds which sugar of lead forms with the constituents of animal organic matter are very little or not at all soluble in water, poisoning by lead in all those parts of the body which do not abundantly secrete acids, can only take

place slowly or not at all. Wounds and ulcers are in the same predicament in which a general action of the lead is exhibited, as soon as the acetate of lead decomposed by albumen, and dissolved in acetic acid, is brought in contact with them. The parts are acted on by the acetate of lead, but the oxide of lead remains in its new state of combination, wholly, or for the most part, undissolved.

The acetate of lead in the stomach or on a secreting surface, accumulating, is first decomposed by the secretion and the contents of the organ on which it has collected. This we ascertain by means of large and small doses, and can perform the experiment with safety when it is made with combinations of salts of lead and organic matter.

Acetate of lead passes in the stomach when it is decomposed by the constituents of the secretions, and its contents partly into combinations soluble in water, but the greater portion remains as an insoluble combination with the mucus. The dissolved compounds are partly of themselves dissolved by water, and partly are brought into solution by the free acids of the stomach, chlorohydric and lactic [?] acids.

Acetate of lead, when it is not completely decomposed by the constituents of the secretion, presents two series of appearances, viz. the direct corrosion of the organic surface of the mucous membrane, and new soluble compounds of lead with organic matter. If it is on the other hand completely decomposed by the secretion, the last appearance only occurs, which is produced when we combine the acetate of lead with albumen, dissolve it in acetic acid, and poison an animal by this compound.

The corrosion which the acetate of lead produces in the stomach depends upon the affinity of this metallic salt to the constituents of the mucous coat, and the deteriorated portions of the mucous coat are in a similar condition to other organic surfaces which are corroded by acetate of lead, for example, ulcers. The scurf formed is of a white colour, partially dissolves mechanically, partially is decomposed by the contents of the stomach, or passes out along with the fæces. The parts injured are similarly affected to an ulcer when it is corroded by acetate of lead; no inflammation is produced, but either a rapid cure or an ulcer. The direct corrosion of the living surface hastens death. But if the acetate of lead is decomposed before its contact with the organic surface, the peculiar poisoning by lead alone follows. This is also occasioned by the combination of the salts of lead with animal matter dissolved in muriatic and lactic acids. But we can produce it more certainly when we decompose acetate of lead with albumen, dissolve it in acetic acid, and poison by this solution.

Thus far are the appearances of the action of lead cleared up. But to expose the subsequent symptoms, it is necessary to examine the chemical properties of these new compounds among each other; their chemical action, and their relation to the different solid and fluid parts of the organism. Besides a much more intimate knowledge of the composition of many animal structures than we at present possess, is requisite. Such an examination is scarcely practicable with our present methods of investigation. The solution of the new compound in acids acts chemically. This has been ascertained after death, both in the stomach and in wounds.

The chemical examination of the blood and urine shows that the blood, in cases of poisoning, after death contains very little or no lead, and that no lead is discharged with the urine; that a combination takes place in the blood is very probable, because the symptoms in the living body are not of the kind which can be attributed to injury of the nerves. The symptoms proceed slowly, and increase in proportion to the chemical action. All symptoms on the contrary, which proceed from any of the nerves, follow rapidly, almost immediately.

Gaspard's experiment with 2 grains of sugar of lead introduced into the jugular vein is an illustration of this.

The appearances during life agree with those after death, and clear up, in a great measure, the action. An interruption in the functions of the intestinal canal, of the lungs, kidneys, and of nutrition, is more or less evident in experiments. The large intestines are usually empty. In dogs, we can easily excite a sanguineous extravasation in the whole of the intestinal canal. In rabbits, this exudation of blood is observed in different places. It is observable especially in the cavity of the abdomen, in the sac of the pleura, and in the urine. In one case it

was observed between the outer membrane and the cortical substance of the kidneys. The organs in which this extravasion appears only undergo a change of structure, in so far as the vessels are filled with blood and the structure appears red. In the intestinal canal it is only the interior vessels which are affected. We sometimes find much blood in the large vessels under the peritoneum which covers the intestinal canal, but no inflammation.

If blood is extravasated in the sac of the pleura, the lung is darker than usual, but not soft and hepatized. In bloody urine the kidney is never softer, but darker than usual, and we find the cortical substance and the interior of the kidneys as far as the papillæ more or less coloured, by which we know that the vessels are filled with blood. We have in this case a similar appearance to that which is exhibited in dogs in the intestinal canal; in rabbits, in different organs, sometimes in one, sometimes in another, but especially in the kidneys; this redness of the organs occurs in different degrees, sometimes accompanied with extravasation of blood. Orfila and others have considered it inflammation. Gaspard calls it a slow, peculiar kind of inflammation. But this redness is not an inflammation, as the structure is not softened, and we do not find the capillary ramiform and point-like injection which characterizes true inflammation. The symptoms during life also are not inflammatory. The only symptom of fever is constant thirst. This redness which occurs in poisoning by many other metals, is probably produced by a decomposition of the blood. An engorgement of the vessels with blood takes place in the secreting organs. The external appearance of the blood also strengthens this idea. It has a peculiar colour, and is strongly coagulated; the blood globules are very dark, and the fluid part is more or less considerable, according to the manner in which the thirst has been appeased during life, but always possesses a peculiar red colour, and often contains mucus (*schleimig gefunden.*) These external appearances point out an alteration in the blood, although chemical and microscopical examinations exhibit no substantial changes. The redness does not prove the existence of inflammation, but only an engorgement of the absorbents, in consequence, probably, of the decomposition of the blood. The cause of the extravasation of blood in the intestinal canal from poisoning by wounds, by the veins, and by the stomach, is not yet ascertained. We must rest contented with the fact. The difficulty of respiration is accounted for by the *post-mortem* appearances. The lungs are found to be very dense after death, with some dark coagulated blood in the capillary vessels, almost without serum and air. This is less distinct when the poison has acted through a wound; in a stronger degree when a solution of sugar of lead in large doses has been introduced into the stomach. The function of the kidneys is essentially changed. The excretion of urine is greatly increased, and in proportion to the thirst. The urine is clear when the poisoning has been gradually produced by small doses, but it becomes milky and even bloody when the poison doses have been large. In the latter case we find the vessels of the kidney more or less filled with blood. In very large doses, which have strongly corroded the intestinal canal, a change in the urine occurs more seldom. From these appearances we may presume that injurious matter is separated from the blood with the urine, more especially as the animal recovers itself after such evacuations, and we may consider the thirst as a requisite for supplying the waste. This deduction however is not proved, as no such chemical matter has been detected in the urine. The liver and spleen only exhibit alterations in colour, which depend on the infiltration of blood. The brain exhibits no change, but the activity of the spinal marrow is often interrupted; and we find frequently paralysis of the posterior extremities. No remarkable changes are perceptible in the spinal marrow after death. The whole of the body of the animal is, after death, emaciated. This is easily accounted for by the great evacuations from the kidneys, &c.

From these results of experiments upon the physiological action of acetate of lead, it is obvious that the facts observed are of importance in a practical point of view.—*British Ann. Med.* 17 *Feb.* 1837, and *Müller's Archiv. fur Anat. Phys., &c.* No. V. 1836.

SPECIAL PATHOLOGY AND SPECIAL THERAPEUTICS.

19. *On Gastralgia.*—Dr. H. C. Lombard, Physician to the Civil and Military Hospital of Geneva, has treated a great number of cases of gastralgia by the *nitrate of bismuth*, and he has almost always obtained a remarkable amelioration of the disease, if not a radical cure. Gastralgia with or without vomiting promptly yields, Dr. Lombard says, to the administration of bismuth; the pains and vomiting which accompany cancer of the stomach are also calmed by the same remedy, although the progress of the disease is not arrested; but it is a great advantage to give relief even if we cannot cure.

Efficacious as is the bismuth in gastralgia, cases sometimes occur which will not yield to this medicament. In some of these Dr. L. has found the *oxide of zinc* to succeed. This substance may be administered in the dose of from six to twelve grains in the twenty-four hours. Its action Dr. L. considers very similar to that of bismuth, viz: exercising a sedative influence on the pneumogastric nerves. The zinc, he thinks, particularly indicated in gastralgia, symptomatic of leucorrhœa; and, he says, that in females afflicted with this complaint, the pains in the stomach are remarkably relieved by the zinc combined with some narcotic extract, as the lactuca virosa, the cicuta or opium.

Alkalies sometimes succeed when the metallic sedatives fail. The sub-carbonate and bicarbonate of soda exert a very favourable influence in cases of pyrosis and acid vomiting; they are also very useful in that form of gastralgia caused by a deficiency of the salivary secretion. Persons afflicted with this form of the disease have great dryness of the mouth, and experience an urgent necessity for drinking copiously to aid mastication, and afterwards digestion. In these cases the alkalies in the form of soda water, &c. succeed very well. The sub-carbonate of magnesia, lime water and the solution of caustic potash fulfil the same indication in all cases where acidity is the predominant character of the gastralgic symptoms. The solution of caustic potash in doses of a few drops in an aromatic vehicle often succeeds when the other medicines have failed; its action, Dr. L. considers as both chemical and tonic, and this double property renders it highly valuable in a number of cases where the acid secretion results from debility which can be alone relieved by tonics.

Some cases of gastralgia of long continuance, in which bismuth, alkalies and antispasmodics failed to afford relief, Dr. L. has treated successfully with *warm water*, drank in large quantities, and as hot as the mouth and œsophagus could bear. He has found this remedy to succeed particularly in females, whose menstruation was irregular and scanty, and also often in those labouring under profuse leucorrhea. He gives at first seven or eight ounces of the hot water, and repeats the dose two, three, four, and even eight or ten times during the day, and principally when the pains come on. Fulness of the stomach does not contra-indicate the ingestion of the water. He has continued this remedy several weeks without the stomach appearing enfeebled by the ingestion of so large a quantity of liquid, for not only have cases of gastralgia which had resisted for several years every other treatment, yielded to this remedy, but the digestive functions have resumed their activity so that the patients have acquired flesh and strength.

Relapses of gastralgia are often induced by mental causes, and here Dr. L. recommends the *antispasmodics*, as æther, valerian, assafœtida, and particularly the animal oil of Dippel in the dose of eight or ten drops a day in form of pills.

Purgatives sometimes relieve cases of gastralgia which have resisted other remedies. In young girls affected with chlorosis and scanty menstruation, the bitter purgatives, and particularly aloes, afford great relief to the gastralgic symptoms. They are also useful when the disease results from atony of the liver.

Gastralgia sometimes results from an atony of the muscular fibres of the stomach, and in these cases digestion is imperfect and remarkably slow. In these cases Dr. L. recommends the nux vomica, either in extract or tincture: one or two drops of the latter is often a sufficient dose.

Gastralgia is sometimes occasioned by an exalted nervous sensibility of the stomach, which makes the contact of the food not only painful but sometimes

unsupportable, whence result the pain and vomiting which follow immediately after a meal. A few drops of laudanum taken with the first mouthful of food often affords relief, acting as a calment to the mucous membrane.

External applications, both irritating, as sinapisms, blisters and moxas, or sedative, as morphium, and prussic acid, are useful in some cases of vomiting and cramp of the stomach. Revulsives to the skin are a valuable resource when other methods of treatment have failed or are too slow in their operation. During the violence of the pain, sinapisms are useful, but to effect a cure, blisters to the epigastrium are most efficacious, especially if they are kept discharging for some time. Dr. L. has seen some very obstinate cases cured by this application. He has also derived benefit from the same application to the neck, especially in those cases which appeared to him to depend upon a morbid condition of the brain, or pneumogastric nerves. He considers this also the best remedy for spasmodic affections of every description.

The application of antispasmodics and narcotics to the epigastrium often, according to Dr. L., relieves the most violent attacks of gastralgia. A plaster of assafœtida he considers very useful, and frictions with a solution of morphium or cyanuret of potassium still more so; six to twelve grains of either in three ounces of water.

Regimen is not to be neglected in the treatment of this disease. All indigestible food must be avoided and the diet should consist of meat jelly, farinaceous articles and eggs. There are some cases of vomiting which will not yield to any medicament, and which are relieved by milk, given a tea-spoonful at a time and repeated every quarter of an hour. Ice, the effervescent mixture and gaseous water are also useful. The white of an egg with water, Dr. L. regards as a most valuable drink in this disease. Finally, change of air, especially to elevated situations, has been found eminently useful by Dr. Lombard.—*Gazette Médicale de Paris*, December 10, 1836.

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20. *Chronic Gonorrhœa cured by Nitrate of Silver.*—M. Rognetta has recorded in *La Lancette Française* (31 March, 1836) a case of Gonorrhœa of two months and a half duration, which had resisted the usual remedies, and was cured in four days by injections of nitrate of silver, one fourth of a grain of the salt dissolved in one ounce of water, repeated twice daily.

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21. *Condition of the pneumogastric nerves in phthisis.*—Professor Schœnlein, in an account published some years since of his researches relative to the condition of the pneumogastric nerves in phthisis, states that he found these nerves tumefied in a portion of their extent, in about a third of the subjects he examined. Dr. Lombard of Geneva, has endeavoured to verify this statement, and although he has examined with this view more than thirty phthisical patients, he has never met, in a single case, with tumefaction or morbid colouration of these nerves.—*Gaz. Méd. de Paris*, 10 Dec. 1837.

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22. *Lactic Acid in Dyspepsia.*—Magendie believes that lactic acid will be found useful in Dyspepsia; he has been led to this from the properties it possesses of acting upon animal matter and speedily dissolving phosphate of lime. He prescribes it in the following form: ℞. lactic acid (sp. gr. 1.21) 1 to 4 drachms; water 32 oz.; syrup 2 oz.

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23. *Alum in Gonorrhœa.*—Dr. Frederick of Leipsic, has long employed alum in the inflammatory stage of the above disease in the following form: crude alum from 1 to 2 drachms; distilled water, 6 ounces; liquorice juice, 1 oz.; of this a table-spoonful is to be taken three times a day. After some days, the pain in micturition diminishes, and erections become less frequent.—*B. Ann. Med.* 3 March, and *Kleinert's Repertorium.*

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24. *Acetate of Lead decomposed by Carbonate of Soda in the Diarrhœa of Phthisis.*—M. Alph. Divergie has found this article very efficacious in arresting the colliquative diarrhœa, which so rapidly brings on the fatal termination of pulmonary phthisis. He prescribes it in the following manner: two grains of the neutral acetate of lead, and one grain of carbonate of soda, are separately dissolved in a

small quantity of water; two or three ounces of flaxseed tea, containing four drops of laudanum of Sydenham, are added to these solutions, and as soon as the mixture is made, it is given in injection. By augmenting gradually the dose M. D. has given five grains of the acetate of lead, and two and a half of the carbonate of soda. These enemata should be repeated morning and evening. M. D. has employed this medication in a great number of phthisical patients, and always with advantage; sometimes the diarrhœa, though of long continuance, has been entirely arrested, and in all cases it has been diminished, and sometimes the expectoration and sweats have also diminished.—*Bulletin Gén. de. Thérap. 15th of September*, 1836.

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25. *Case of poisoning with arsenic treated with the hydrated tritoxide of iron.*—Evidence is accumulating of the efficacy of the tritoxide of iron as an antidote to arsenic. Mr. John Robson, house surgeon to the Warrington Dispensary, has communicated to the *London Medical Gazette*, 5 Nov. 1836, the following case:

"On Wednesday, September 7th, 1836, a man bought a quarter of an ounce of arsenic, and about two o'clock in the afternoon mixed it in a teacup with a quantity of water, stirred it round two or three times rapidly with a teaspoon, and immediately swallowed it; a portion, not more than a quarter of the whole, remained at the bottom of the cup. He then walked out with a person who had unsuspectingly witnessed the proceeding, and who was quite incredulous till the man's altered countenance confirmed his positive assertion that he had taken poison. Nearly a quarter of an hour elapsed before he began to feel sick; he then introduced his fingers into his throat to excite vomiting, and with some difficulty got up a mouthful of a clear fluid. Having reached a house in the neighbourhood, he complained of violent pain and retching; got some salt and water, which he immediately rejected with two or three pieces of potatoe, but the stomach still retained its other contents.

"Mr. Sharp, Mr. William Furnival, and myself, saw him soon after three. He was sitting on a chair, with a wild and anxious expression of countenance, and his eyes were blood-shot; he was perfectly collected, and spoke correctly; had burning pain about his stomach and belly, which was swelled so as to have burst the buckle of his belt; violent beating at the heart, and an acid taste in his mouth.

"A pint or two of warm water was thrown into the stomach by means of the pump, and on reversing the action of the instrument, a few ounces of fluid came back easily, but the tube became choked up, and was of necessity withdrawn. This was followed by a pretty copious rejection of fluid mixed with potatoes, pieces of which had got into the tube of the pump, and prevented its action. On being cleaned, it was again introduced, and another portion of warm water injected, but the pump, when reversed, still refused to act, and was finally withdrawn. The sickness had ceased, and could not be renewed by tickling the fauces. He felt something better after the vomiting.

"It will not be thought irrelevant to say a few words on the state of the man at this moment. He had in the morning drunk a glass of rum and several glasses of ale. While under the influence of this liquor, and immediately before taking the arsenic, he had eaten five or six cold potatoes. The exact quantity of arsenic swallowed could not be ascertained, but it must have been a very large dose.* The vehicle in which he took it was one very likely to produce its peculiar effects upon the stomach; it was also evident that the sickness previous to the use of the pump had left the contents untouched, or nearly so. The injection of the warm water would still further dilute the fluids already in the stomach; and allowing that a portion of the arsenic was dissolved and vomited,† would not the very dilution facilitate the deposition of the remainder on the mucous membrane?

"It was now two hours since the poison had been taken. About six drachms of the carbonate of iron were mixed in water and given to him at twice, one draught immediately following the other. He said his stomach felt cooler; and his pulse,

* A quarter of an ounce of arsenic sold in the shops equals two drachms and two scruples apothecaries' weight.

† A part of the fluid with potatoes rejected at this period, after having been boiled and filtered, was subjected to the action of sulphuretted hydrogen gas, and assumed the characteristic lemon tint, but remained perfectly clear.

which had been upwards of 130 just before, sank to 112. The pain ceased, or nearly so. He was ordered to bed, and to take half an ounce more of the carbonate in half an hour.

"At half-past five I found him asleep, and in a copious perspiration. When he awoke he had no pain; there were occasional sensations of burning in the epigastrium, and strong palpitations; pulse 108; his eyes were still red, and his look anxious. A quantity of the newly prepared oxide of iron was now administered. In the course of the evening he made a large quantity of clear and healthy urine. The pain continuing under the ensiform cartilage, he had ten leeches applied. He did not sleep. About two in the morning he was seized with violent pain and twisting in the belly, which was followed by vomiting; his bowels acted two hours after, and the urine was abundant. The matter vomited seemed to consist principally of the oxide, but at the bottom of the pot were some pieces of stringy mucus, which might be drawn up the sides amongst the urine; the stool could not be examined. He said he felt sick and worse after taking the physic; occasional heartburn; pulse 90.

"On Thursday morning we had more of the prepared oxide, which was more carefully washed than the first. He said it was not so good to take; but he had no more sickness; pulse 75; slight headache. He slept soundly in the night, and early on Friday morning felt an inclination to go to stool, but passed nothing. The oxide was discontinued, and he had an ounce and a half of castor oil, which operated twice. The first stool was of a formed consistence, of a dark green colour mixed with brown, and with several pieces of undigested potato in it, exactly like those vomited on Wednesday; the second stool was preceded by some griping, but was not seen. He had some twitching in his head on Saturday, so that, as he said, he was not able to hold it still. Had another stool, of a natural consistence, of a peculiar brown colour, and partially covered with a black shining mucus. His diet during the whole time consisted of gruel, tea, and dry toast."

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26. *Neuralgia relieved by muriate of ammonia.*—Mr. F. C. Skey states that he has repeatedly seen the form of neuralgic pain which frequently attacks pregnant women, and occasionally referred to the presence of a carious tooth, relieved in the course of a few hours by half drachm doses of the muriate of ammonia, taken in solution.—*Lond. Med. Gaz.* 5 *Nov.* 1836.

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27. *Neuralgia cured by aconitine.*—Two cases of neuralgia which had resisted every description of depletive and counter-irritant, and which were cured by the application of aconitine, are recorded by Mr. F. C. Skey in the *London Medical Gazette*, (Nov. 5, 1836.) The remedy was rubbed down into an ointment with lard, in the proportion of one grain of the former to one drachm of the latter, and applied in a small quantity by the forefinger over the track of the painful nerve, and was gently rubbed or rather smeared over the surface, for half a minute or longer. The applications were according to the degree of pain,—either once or twice in the day.

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28. *Thymic asthma.*—Our preceding No. contains a full account of this disease, collected from the writings of Drs. Kopp and Hirsch of Kœnigsberg and Dr. Montgomery of Dublin. It will be remembered that according to the writers just mentioned, the disease depends upon an affection of the thymus. Dr. Roesch of Schwenning, Wurtemberg, in a memoir in a recent No. of *Hufeland and Osann's Journal der Practischen Heilkunde*, whilst he admits that in all cases hypertrophy of the thymus has been met with, denies that this condition of the gland constitutes the essence or basis of the disease, since the symptoms of suffocation which are observed are not those produced by a mechanical obstacle to the circulation of the blood in the heart—there being no lipothymia, no asphyxia, no instantaneous cyanosis, and if the face becomes bluish, it is not until the paroxysm is protracted and the respiration has remained long suspended. The infants keep their mouths opened to inspire the air, and as soon as a small column of air has penetrated into the lungs, which is announced by the peculiar cry of the patient, the paroxysm has terminated.

Secondly, the attack does not follow exertion or unruly movements, as would happen if it were excited by the mechanical pressure of the thymus on the large

vessels: on the contrary comes on in moments of repose and especially when the child awakes. Finally, the cure, when once effected, is principally due to the administration of antispasmodics.

The disease in question, according to Dr. Roesch, is then, a neurosis—a spasm of the glottis,* a convulsive asthma of the larynx; and several times a material disorder of the organs which form the larynx has been found. Thus Caspari has found the pneumogastric nerve softened; as was also the brain in that case. In two other cases, the ligaments of the glottis, and in a fourth the epiglottis had undergone the same transformation without any traces of inflammation.

M. R. endeavouring to establish a parallel between the croup, asthma of Millar, and thymic asthma, considers the first as a subacute inflammatory neurosis—a neurophlogosis of the larynx: the second as an acute neurosis without inflammation; and the third as a chronic neurosis of this organ. He conceives this last to depend upon an impoverishment of the blood, to a deficiency of assimilation and nutrition. In fact, the subjects of thymic asthma are for the most part of a scrofulous constitution, rachitic and very subject to attacks of convulsions.

Dr. R.'s memoir contains an account of four cases, the symptoms and progress of which present nothing peculiar: the ages of the patients were from 5 to 15 months. The first died, the second was cured, and the two others have been lost sight of by the author.

The treatment employed by Dr. R. is tonic and antispasmodic, and he particularly lauds the utility of the cod's liver oil.

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29. *On Hypertrophy, with Dilatation of the Heart, in Children.* Dr. Toel, of Aurich, is of opinion that this affection frequently developes itself as a consequence of pulmonary inflammation, measles, hooping-cough, &c. It comes on insidiously, after the patient appears to have, in a great measure, recovered from one of the above complaints. It is a more frequent result if the latter have run an irregular course. Then, after some time has elapsed, the pulse, which had lost its inflammatory character, becomes quick, small, and sometimes irregular. A dry cough, without pain or expectoration, makes its appearance. The sounds of the heart are heard over a greater extent than usual; the strokes are not distinct, and would seem to flow into one another. The patient feels a weight and dull pain under the sternum, on the left side, but does not complain much of it. The breathing is shorter than formerly. The face assumes a very peculiar and almost indescribable expression of suffering. Towards evening the hands are perceptibly hotter; the jugular veins beat without intermission. The little patients are not yet thought to be very much out of health; they walk about, go to school, are only rather more delicate than usual, avoid a horizontal posture in bed, are very short of breath after exertion, and become more irritable than formerly. It is here, as usual, very difficult to define the point at which functional becomes structural derangement; but the latter may be confidently surmised when the symptoms continue without intermission, even during a period of perfect repose.

Dr. Toel recommends vigorous measures as soon as any of these symptoms make their appearance. The expectant method would lead inevitably to a fatal result. Antiphlogistic remedies must be adopted in full force, perfect repose both of mind and body enjoined, together with the absence of all stimulating, and the diminished exhibition of all nourishing agents. Should this stage of the disease be not combated vigorously and successfully, there is no hope for the future. The progress of the evil may be now slower, and now more rapid, and sometimes even be apparently arrested, but it is sure never to cease altogether. The symptoms which attend its advanced age are too well known to need a new description. Dr. Toel's principal object is, to direct the attention of medical men to the fact that hypertrophy of the heart frequently follows the diseases above mentioned, as he is of opinion that such a result has not been sufficiently known, and consequently not sufficiently guarded against.—*B. and F. Med. Review*, from *Hannoversche Annalen*, B. 1., Heft. 2, 1836.

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30. *Etherial Tincture of male Fern Buds in cases of intestinal worms.*—Dr. Peschier, of Geneva, asserts that he has cured 150 cases of Lumbrici, triocephali,

* This is also the opinion of Caspari, Marsh, Clarke and Pagenstecker.

and teniæ, in nine months, with the ethereal tincture of male fern buds (Polypodium felix mas) in doses varying from viii. to xxx. drops, in as many pills as there are drops. His brother, an apothecary at Geneva, and the discoverer of this tincture or oil, gives it in doses of from thirty to thirty-six drops in syrup or castor oil, or in pills one half at night and the other on the following morning; and two hours after the morning dose Ol. Ricin. ℥ij. This quantity is usually sufficient to expel the worms.

Dr. Fosbroke (Lancet 8 Aug., 1835,) gives it on a lump of sugar, and seems to have had much success with the remedy.

Culpepper and Salmon as well as some of the older writers, as Dioscorides, Theophrastus, &c. speak of the anthelmintic powers of the male fern, and in the hands of Madame Nouffer, as a secret remedy, it acquired such celebrity that the French government were induced to pay her a large sum for making public her remedy.

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31. *Cold affusion in Ileus.*—Dr. Wolff, of London, relates in the *Lancet* (10 Dec., 1830) a case of ileus, in which cold water poured on the abdomen and the application repeated at short intervals, seems to have materially contributed to the cure.

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32. *Enemata of Belladonna in Ileus.* *Hufeland and Osann's* Journal for the past year contains an interesting paper by Dr. M. B. Hanius on the utility of enemata of belladonna in the treatment of ileus. Dr. Hanius records five cases of the disease, three of which were of the greatest severity, successfully treated by this means. In the two first cases he prepared the enemata according to the following formula: ℞ Rad. Belladon. 3j. aq. Bullien. q. s. Digest in a close vessel for an hour and strain. Two ounces of this was mixed with an equal quantity of infusion of chamomile and administered as an enema. In the three other cases he used an infusion of the plant instead of the root, three drachms to six ounces of water, one fourth administered at once and the like quantity two hours afterwards.

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33. *Nitrate of silver in chronic affections of the stomach.*—In consequence of the favourable representations of Dr. James Johnson of the efficacy of the nitrate of silver in neuroses of the stomach, Dr. Ruef has been induced to experiment with this article in a great number of chronic affections of the stomach; and his experience not only confirms that of the English practitioner but has also led him to new results. Dr. R. in an article in the *Medicinische Annalen*, (Vol. I. No. 2.) states that he employed the nitrate of silver in idiopathic neuroses, in cancer and scirrhus indurations of the stomach as a palliative and calment, and also in certain chronic inflammations of this organ, though he cites no cases of this last.

In many cases of true scirrhus of the stomach and even of the duodenum and transverse arch of the colon, the nitrate of silver has proved to be an excellent palliative, a powerful sedative; in some cases appeasing the intolerable pains which ordinarily accompany this disease.

Dr. R. has observed no injurious effects from the use of the nitrate of silver, no discoloration of the nails or skin. He constantly administers the article in pills according to the following formula. ℞. Argent Nit. gr. x; Extr. Taraxic, Rad Iris Florent, āā gr. lxx. m. ft. pilul. No. 40. One to four pills to be given night and morning.

Dr. Ruef also recommends this article in the cases of nervous vomiting and other derangements of the digestive functions so common in young infants. He has administered it to one of these little patients with success according to the following formula. ℞. Argent Nit. gr. ½; Aq. Flor. Aurant. Syr. Canell. Alb. āā ℥ss. A tea-spoonful every hour.

We feel convinced from our own observations that the action of nitrate of silver upon the mucous membranes is not properly appreciated, and that in inflammations of this tissue it often acts as a specific. Its powers are deserving of more extensive investigation.

SURGICAL PATHOLOGY AND OPERATIVE SURGERY.

34. *Excision of a portion of the ileum and the mesentery.* Professor Dieffenbach, of Berlin, has added to his laurels by the successful performance of this operation. We give the Professor's own account of the case as published in the *Wochenschrift für die gesammte Heilkunde* for June, 1836, adopting the translation of the London Medical Gazette.

Some months since I was called upon in the morning to attend a country labourer, aged 50, suffering under strangulated hernia. I found a strongly built, powerful man, with femoral hernia on the right side. The incarceration had already existed fourteen days; and during this time, repeated but fruitless attempts to replace the intestine had been made by different surgeons. From the extended inflammation in the whole neighbourhood, added to the prolonged incarceration, I was led to expect that mortification, together with extravasation of fæcal matter in the hernial sac, had already taken place. As the skin and integument were not yet weakened, I considered the immediate opening of the sac as the first and most important step; still the unruly old man would scarcely allow me to make an examination with my fingers, much less would he consent to an operation. In addition to these difficulties, the patient being quite deaf, prevented the necessary explanations of his condition; so that I found myself at length obliged to give up all hopes of affording relief. I should, perhaps, mention that the patient had suffered, during the whole time of the incarceration, all those symptoms which usually accompany strangulation. The abdomen was tense and distended; there was perfect obstruction, and, in short, all the symptoms which would seem to threaten speedy death. Still it was matter of satisfaction to me that in leaving the patient, there appeared so little chance of success, had he consented to my operating upon him.

The following night I was again requested to visit the patient; it was with reluctance I went, because the journey promised so little success. The poor man was now sinking fast, and the anxiety of death was evident.

The abdomen was more tympanitic than in the morning, and, indeed, the separate convolutions of the intestine could be plainly distinguished through the abdominal parietes. There was also that violent rumbling of gas in the intestines, so often a symptom in extreme cases.

With the help of my valuable assistant, Dr. Hildebrandt, and the landlord of the house, I undertook the operation. The first step was an incision, the length of my finger, through the centre of the widely-extended and flat tumour. The cellular membrane was spotted, and firmly attached to the outer coat of the hernial sac. Upon opening the sac, there escaped a putrid mass, consisting of decomposed hernial fluid, with portions of gangrenous intestine and fæcal matter. The small portion of strangulated intestine (about the size of a plum) had an aperture in its superior surface large enough to admit the thumb. After properly cleansing and examining the parts, no fæces escaped. It was with difficulty that the forefinger could be introduced through the mouth of the sac into the intestine; and again, upon withdrawing my finger, nothing followed it. Without disturbing the adhesion of the intestine at the mouth of the sac, I made three deep incisions in the femoral ring; this also proved fruitless, and we could not produce the discharge of fæces either by means of manipulation or change of position. This arose partly from the extreme narrowness of the mouth of the sac, and partly from the thickened parietes of the strangulated portion. Once more I applied some force, for the purpose of dilating the neck of the sac, but this last attempt was attended with as little success. Unwilling to let the man die without making farther attempts to give him at least some relief, I proceeded to divide the adhesions, and then drawing the intestine out until I came to the sound part, I cut out the portion that was already perforated and had been incarcerated, together with the thickened portion on each side, altogether comprising a length of about three inches. I also removed with the scissors a corresponding portion of mesenterium. One of the divided arteries of the mesenterium bleeding, I passed a ligature round it, and cut off the ends close to the knot. I did not apply torsion to the vessel, fearing that from the absence of support the vessel might untwist itself, and thus lead to unpleasant consequences. Whilst I was

thus engaged, each of my assistants held a portion of intestine between his fingers. These portions contracted so firmly, that nothing larger than a common quill could have been introduced; the extreme edges, however, were relaxed, and could be easily directed outwards. I now proceeded to join together the angular wound of the mesentery, by bringing its edges into contact by means of a continuous suture, which was composed of a very fine silk thread. I then joined the edges of the intestine by means of a separate thread, making the first stick at about two lines distance from the edge; and so, by passing the suture transversely across the fissure, whilst each stitch entered the muscular coat, I brought the serous coats in contact with one another, in the same manner that Lambert teaches. The mucous membrane was not at all wounded, but its edges were directed inwards, forming a wring. The intestine was now returned with the greatest care, lest in moving it the edges might be torn through. So far every thing had gone successfully, and I waited some time with the hope of an evacuation taking place. As this did not occur, I ordered some castor oil, and then went home, with the expectation of finding the patient a corpse on my next visit.

Early on the following day I found him still living, but without having had an evacuation. Strong doses of ol. ricini had been attended with no result; I therefore added ol. crotoni, and directed the patient to be raised and placed upon his feet. Immediately after this had been done, there followed some most plentiful evacuations, accompanied with the sensation of considerable relief; and such a general improvement of his condition took place, that he may be pronounced to have been no worse than he would have been had the hernia been accompanied by moderate symptoms. The abdomen had contracted after the continued evacuations, and his feelings were as favourable as could have been wished.

In this manner passed several days, during which I continued a moderate antiphlogistical treatment. An emulsion, consisting of ol. ricini, with aq. lauro-cerasi, was the only medicine I had recourse to. His diet consisted at first only of gruel; afterwards he was allowed veal broth. The condition of the patient improved daily; the only complaint he made was of hunger. He was soon in a state to take solid food without inconvenience, and his stools became quite natural.

There was a considerable secretion of pus during the healing of the external wound, but the abundant granulation showed the excellence of his constitution.

Several of my professional friends visited the patient, and took lively interest in his probable recovery. This followed so rapidly, that after fourteen days he was able to stand, and pass some hours a day in his arm-chair. The dressing of the wound was under the care of Surgeon Sierig, and was attended with such success, that in three weeks only a little scurf remained.

In the fourth week the patient was quite healed; he ate and drank as usual, and returned to his laborious field work. I did not visit him after that time, neither did he come to me.

Some weeks subsequent to the perfect recovery of this man, I was requested suddenly to visit him; but as I was indisposed at the time, I begged Dr. Von Arnim to go in my stead. He found that the patient, after heavy labour, and an immoderate meal of fat meat and other indigestible substances, was suffering from violent pain in the abdomen, vomiting and constipation. From these symptoms, Dr. Von Arnim anticipated intussusception. Bleeding in the arm, and by means of leeches, purgatives, and clysters, was had recourse to, but without success. The pain became more and more violent, and the obstruction of the bowels remained until he died.

I was present at the *sectio cadaveris*, and although I felt vexed at the death of perhaps the only man living at that time who had recovered in so astonishing a manner after the excision of a portion of intestine, yet, on the other hand, it was matter of consideration to me to think that the death of the patient would explain the mode of healing, and secure a boon to the science.

The following is the result of the post-mortem examination, conducted by Professor Froriep with his usual care and ability:—

In outward appearance the body was well-conditioned and firm. The abdomen was very tense, and somewhat distended. Percussion with the finger gave no sign of the hollow tone distinguishing tympanitis, but, on the contrary, the dull sound which is usually heard only over the liver was extended over the

whole abdomen. In the right groin was a bluish firm cicatrix, somewhat sunk, although not drawn inwards. The navel was free from contraction inwards. Upon opening the abdomen, some reddish clear fluid escaped. As the abdominal parietes, which had been divided by a cross section, were thrown backwards, it was observed that the entire anterior portion of the cavity was occupied by the distended and extremely complicated convolutions of the small intestine, so that all the other viscera were concealed by them; a portion of the omentum only was seen emerging from the right hypochondrium, and passing obliquely over towards the pelvis, was attached in the neighbourhood of the left foramen obturatorium. Underneath this portion of omentum the intestines moved to-and-fro with perfect freedom; therefore no sort of obstruction could be caused by it. This band was then divided, and the intestines, which formed so compact a layer, were lifted up, in order to see the condition of the other parts situated more deeply.

In the right iliac region were the cœcum and a convolution of small intestine, not distended as the remainder, which was firmly attached to the posterior edge of the femoral ring, and from this spot was continued a portion equally free from inflammation and distension: this passed over to the left lumbar region, where it ended in a complicated knot of small intestine, adherent to the parietes, quite firmly united, and considerably inflamed.

This preliminary examination gave evidence of two abnormal conditions: first, adhesion and intricacy of the small intestine in the left lumbar region, above which the intestine was inflamed and immoderately distended,—below it, empty, collapsed, and uninflamed; secondly, adhesion of the intestine at the inner femoral ring on the right side, where the operation had formerly been performed for hernia: still, it was nevertheless evident that the intestine was not impermeable at the seat of the operation, but at some point considerably above it, the portion of intestine lying on each side of the spot alluded to being empty. Still, great care was necessary in pursuing the investigation, as nothing could more easily occur than such a displacement of the parts as should prevent the recognition of the true cause of the obstruction.

After examining the colon, and finding that congestion and distension were only in the small intestine, I commenced at the duodenum, and continued the examination from thence downwards; its coats were thickened, and here and there upon its surface were perfectly isolated patches of coagulated fibrin. In the cellular tissue, between the serous and muscular coats was a partial serous extravasation. These signs of enteritis became more evident on the ileum, where the convolutions were in some places slightly adherent one to the other. When I got to the middle portion of the ileum, I found the colour of the intestine a dark purple red; it was distended to treble its usual volume, and covered with numerous congested and dark-looking blood-vessels. The distension was greatest in the neighbourhood of the adhesion in the left lumbar region, but it terminated suddenly at a part where another convolution of the ileum was drawn round the first like a band. The distension was not caused by gas, but by an immense quantity of fluid fæcal matter which filled the stomach, duodenum, jejunum, and ileum, as far as the obstructed spot. The obstruction was occasioned by a portion of the ileum being united, by means of false membrane, to a convolution which had evidently after this completely revolved upon its axis, so that the two processes of this convolution had twisted themselves about one another like the strands of a rope. In this situation new false membrane was produced (evident from the redness of its vessels), and thus the entire convolution was firmly united, and the constriction of the ileum made inseparable. Around the whole lay more recent patches of coagulated fibrin.

In the convolution and below it the intestine was almost empty, containing only a small quantity of pale yellow mucus, without fæcal odour, and in some parts collapsed into folds. A portion of intestine in this part, about two feet in length, and likewise empty, passed over towards the right side, across the lumbar vertebræ. Here was likewise a firm false membrane from one portion of intestine to another adherent portion: underneath this was a space sufficiently large to admit three fingers; this was empty. From this spot the intestine passed downwards into the cavity of the pelvis in many convolutions, and was closely attached to the right side; it then ascended a little, and passed immediately to the inner

orifice of the right femoral canal, where it was likewise firmly adherent to the abdominal parietes. As I carefully divided the pseudo-membrane in this part, between the abdominal muscles and the intestine, to the depth of from two to two and a half lines, with a scalpel, a drop of pus made its appearance; and as I wiped this away with a sponge, I discovered the end of a silk suture, which, however, was still firmly embedded: of course this proved that I was arrived at the place where the intestine had been united in the operation. This spot was firmly connected with the parietes and the neighbouring convolutions. I now opened the intestine above this part sufficiently wide to admit the little finger; this passed easily, and, indeed, directly after I passed the index finger through the formerly-divided spot there was contraction of the passage to be discovered. As I now proceeded to open this part from above downwards, the superior portion of the ileum was united with the inferior by means of a smooth cicatrix, which was only interrupted in two spots by the suture: in this cicatrix lay the suture before described as seen externally, firmly attached at the point *o*, and from thence its two threads passed downwards, lying in the cavity of the intestine. From this spot the ileum proceeded behind the convolutions across the *linea innominata*, and, after extending itself a few inches, joined the cæcum. Here we found a few hard fæcal lumps, and the pale yellow mucus before mentioned. From the anterior or outer side of the spot where the intestine had been joined, the substance of the cicatrix passed through the canal communicating with the external cicatrix.

The superior portion of the intestine is quite smooth, and has neither swelling nor fold as far as the inner smooth cicatrix, where the *papillæ* of the mucous membrane cease. This line is about half a line wide, and below it the intestinal coats are collectively contracted into a triple fold, or projection, which is kept in that condition by the adhesion and subsequent contraction of the pseudo membrane, which lies externally, and connects this portion with the cicatrix, as before explained. Below this tumour the intestine is in every respect in its natural condition. For some little space both above and below, the intestine was connected with the peritoneum lining the anterior parietes by means of effused pseudo membrane, which is likewise in connexion with the cicatrix in the *annulus cruralis*.

As the remaining organs presented nothing interesting in respect to the operation, I shall take no notice of them.

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35. *Wardrop's Operation for Aneurism.*—In an editorial article, in a recent number of the *Lancet* (29 Oct., 1836,) a distinction is pointed out between the operation of Brasdor and that of Wardrop, which seems justly founded, and to which we will therefore invite attention. "The three different operations for aneurism are those of Hunter, Brasdor, and Wardrop, each essentially differing from one another. Hunter's operation consisted in placing the ligature on the artery, at a considerable distance from, and on the *cardiac* side of, the tumour. Brasdor proposed, in such cases of aneurism of the extremities as were so situated that there was not room enough to apply a ligature on the cardiac side of the tumour, to place the ligature on the distal, or what is more technically called the "capillary" side of the aneurism. Though that mode of operating had already been proposed nearly sixty years, it had been performed only three times throughout Europe, on all which occasions it proved unsuccessful, until twelve years ago, when it was revived, and successfully employed, by Mr. Wardrop, in several cases of aneurism of the carotid, for which artery it is undoubtedly particularly applicable.

"But the operation which Mr. Wardrop afterwards proposed was founded on a totally different principle, and perfectly distinct, from the operations both of Hunter and Brasdor. Mr. Wardrop was led to perform the new operation for the cure of aneurism, by a chain of reasoning deduced from observations made on the results of Hunter's operation, and also from the phenomena observed in the spontaneous cure of aneurism. Many cases were recorded wherein Hunter's operation was successfully performed, but in which it was afterwards found that the artery on which the ligature had been placed was not sufficient altogether to prevent the circulation of the blood within the aneurismal tumour, the circumstance of a *diminution* in the velocity of the blood within the tumour being sufficient to permit its coagulation to take place for the cure of the disease. He further observed, that when aneurism was cured by a spontaneous process, nature

sometimes effected her purpose, not by a *complete* interruption of the circulation within the tumour, but by diminishing it to such a degree as to cause its coagulation. Hence he justly concluded, that in cases of aneurism thus circumstanced, when a ligature could be placed neither on the *cardiac* side of the tumour, as proposed by Hunter, nor on the artery on the *capillary* side of the tumour, as proposed by Brasdor, a diminution in the force of the circulation, sufficient to permit the coagulation of the blood within the tumour, would be effected by placing a ligature on the capillary side *of only one branch* of the diseased artery. When, for instance, the arteria innominata is the seat of aneurism, and when it is impracticable to place a ligature on that vessel, either on the cardiac or on the capillary side of the tumour, Mr. Wardrop conceived that if the circulation, either through the carotid artery alone, or through the subclavian artery, could be arrested, then such a diminution would take place in the force of the circulation within an aneurism of the innominata, that a gradual coagulation of the blood would be ensured, fortifying the parietes of the tumour, and so preventing the bursting of the sac. This operation Mr. Wardrop successfully performed in the memorable case of Mrs. Denmark. The operation was afterwards adopted in a case of aneurism of the arteria innominata, by Dr. Mott of New York. The *third* case of aneurism of the innominata was similarly and successfully treated by Mr. Evans of Belper; a fourth case is now added by Mr. Fearn."

A sixth case is recorded in our preceding number, p. 329, by Mr. Morrison of Buenos Ayres. Wardrop applied the ligature in his case to the right subclavian; Mott, Key, Evans, Fearn and Morrison, in their cases placed the ligature on the right carotid.

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36. *New Method of Treating Ozena and Chronic Coryza.*—There are few diseases of a simple kind which are more rebellious than ozena, when once fully established. The numerous methods proposed for its cure, and the numerous cases which we daily see resisting all the means employed to combat this unpleasant malady, sufficiently prove the truth of our assertion. Ulceration of the pituitary membrane has generally been considered as the most prevalent cause of ozena; however, in many other cases, there is evidently no ulceration or breach of surface of any kind; here chronic inflammation has been supposed to exist by many practitioners; but this opinion is opposed by a great many facts, and we are compelled to admit that although chronic irritation may develope ozena, it is not the efficient cause of the disease. M. Trousseau adopts an hypothesis which is sufficiently ingenious, and in accordance with several physiological facts. Many parts of the body, the feet, axillæ, &c., naturally exhale an odour *sui generis*, and in some individuals a very fetid smell. Whenever the parts above-mentioned become irritated or inflamed, this odour becomes still more strong, the irritation exaggerating the natural fetidity to a high degree. The same observation is applicable to the mucous membrane of the nares: in many individuals the odour of the mucus secreted in the nares is naturally strong: whenever they catch cold in the head (as it is said,) this odour increases, and reaches its maximum whenever any cause, such as ulceration, caries, &c., keeps up a permanent fluxion of the nasal mucous membrane. According to this idea ozena may be defined, a peculiar odour of the nasal mucus, which is in general occasioned by a chronic fluxion of the olfactory mucous tissue.

The tenacity of inflammations which attack the mucous membrane of the nasal fossæ has been remarked by all physicians, though nothing is more easy than to combat them by topical means when they effect only the entrance of the nares: hence the obvious conclusion that the difficulty of the cure depends upon the difficulty of carrying our remedial means immediately to the seat of the disease.

The inspiration of medicated vapours presents the most complete means of applying a substance to the whole surface of the nasal fossæ, but is accompanied with the great inconvenience of acting on the lungs at the same time; hence we are compelled to have recourse to insufflation or injection; and of all remedies, experience shows the mercurial preparations to be the most efficacious. We may employ the protochlorure or the deutochlorure of mercury, indifferently, after the following formulæ:

℞ *Protochlorure of Mercury* 24 gr.; *Red Oxide of Mercury*, 12 gr.; *Sugar-candy powdered* ʒ ß.

℞ *Deutochlorure of Mercury* ↄ ij; dissolve in sufficient alcohol, and add distilled water ʒ xij. The patient must inspire strongly a pinch of the powder, and repeat it five or six times a day, or mix one or two spoonsful of the solution in a glass of warm water and inject. By this simple method M. Trousseau has succeeded in curing several cases of ozena and chronic coryza.—*Lancet*, from *Journal des Connaissances Médico-Chirurgicales*, May, 1835.

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37. *Treatment of White Swellings by muriate of Barytes.*—In the *Gazette Médicale de Paris* of 2nd April, 1836, there is a report of a clinical lecture of M. Lisfranc's, containing the results of this eminent surgeon's experiments with the muriate of barytes in white swellings. This medicine has recently been brought into notice, or rather attention revived to it by Dr. Pirondi, of Marseilles. It is administered in the following manner. Six grains of the salt are dissolved in four ounces of distilled water, of which one spoonful is taken every hour, except one hour before and two hours after each meal. In order to tolerate the medicine, the patient must abstain from wine and meat, taking only water and vegetable food. The bottle should not be exposed to the sun, or the salt will be precipitated, and the last spoonsful contain a greater quantity; to avoid this, it should always be shaken. Sometimes the medicine produces slight pain in the stomach, or a feeling of weight; but if other symptoms do not follow, the stomach gradually becomes accustomed to the remedy, and the pain ceases. If, on the other hand, nausea, vomiting, or even some slight symptoms of poisoning come on, the medicine should be suspended, and cautiously resumed. The climate has some influence; for, although at Marseilles two drachms have been given, M. Lisfranc has never been able to increase the dose in Paris beyond forty-eight grains, and often he has been unable to reach that. The unpleasant symptoms have been removed by whites of eggs. Numerous patients have been submitted to this treatment, and the following are the conclusions which M. Lisfranc has arrived at.

1. Generally the white swelling has been much amended, and sometimes cured. 2. The benefit has been greatest amongst the scrofulous. 3. In some very few cases the muriate alone has cured. 4. After a certain time, the disease having become stationary, it was necessary to employ another method. At a later period, the renewed use of the muriate has produced excellent effects. 5. It may be employed both in the acute and chronic stage of white swellings. 6. Serious accidents have never resulted from its use; the slight symptoms before mentioned have always yielded readily. 7. A frequent effect is a diminution in the frequency of the pulse; this falling from sixty or eighty to forty or fifty, or even to twenty-five. 8. In some circumstances the medicine, continued at the dose of twelve grains during the month, has produced as much amendment as in other cases where the dose has been gradually augmented. 9. Where the patients have been slightly inconvenienced with the medicine, it has been most useful. 10. Compression and local abstractions of blood have been often combined with this treatment, and with extreme advantage.

M. Lisfranc regards the muriate of barytes administered as recommended by Pirondi as a valuable acquisition to surgery.

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38. *On the Cure of Intestinal Fistulæ by the Actual Cautery.*—The success attending the employment of the hot iron in the cure of artificial anus, already recommended by Deiffenbach, is confirmed by two cases related by Dr. Fingerhuth.

In both, abdominal inflammation, caused by violent blows, had been followed by external abscess, to which succeeded discharge of fæcal matters. Various cauteries were employed to destroy the membranes lining the fistulæ, and to convert them into granulating surfaces, but without producing their complete obliteration. The fistulous openings, although somewhat diminished by imperfect granulations, showed no tendency to become closed. Cauterization was then adopted by means of an iron, corresponding in diameter to that of the fistulæ, and the temperature of which was scarcely elevated to that of red heat. Luxuriant granulations soon covered the cauterized parts, the fistulæ diminished, and the

surfaces being again destroyed by a heated iron corresponding in size to the apertures which remained, they were eventually cured.—*Dublin Journal*, 1837, from *Wochenschrift für die gesammte Heilkunde*, No. 6, 1836.

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39. *Dislocation of the femur upwards and forwards on the pubis.*—A case of this infrequent accident was admitted into the Glasgow Royal Infirmary. The subject of it was a woman aged 24, in the eighth month of utero-gestation. Eleven hours previous to admission, on going down stairs with a large vessel of water in her hand, her right foot slipped, and, to recover her balance, she threw her body violently backwards, and fell on her right hip. She was unable to rise or to make any use of the limb, which was shortened one inch, and permanently everted. Adduction and rotation outwards could be partially performed, but attempts at adduction or rotation inwards, were productive of acute pain. The globular head of the *os femoris* was distinctly recognised on the pubis, and was seen as well as felt to move in unison with the shaft of the bone. The nates of the injured side was flattened, and there was a distinct hollow in the situation of the acetabulum.

Reduction was easily accomplished by Dr. Macfarlane. She was placed on the left side in bed; a broad sheet was passed between the thighs to fix the pelvis; extension was applied above the knee, and in less than two minutes, the head of the bone was felt to move, when, on sudden rotation inwards, reduction was effected. She left the house in about a week quite well.—*Edinburgh Med. and Surg. Journal*, Jan. 1837.

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40. *New operation on the urethra and prostate.*—Mr. Costello at the meeting of the Westminster Medical Society of the 4th of February, 1837, stated that he had that day performed the operation of scarifying the urethra and prostate gland; and as the operation was as simple as leeching, and far more efficacious, he would shortly state the process, and the accident which first brought it under his notice:—Upon one occasion he was engaged in performing lithotrity upon a patient 73 years of age; *the bouton de sureté* upon the instrument which he employed, had been carelessly made with sharp, cutting edges; and, upon withdrawing the instrument, he discovered that it had scarified the passage of the urethra and the covering membrane of the prostate gland, so as to cause hemorrhage from these parts. Though somewhat startled at the occurrence, he was glad to find that no unpleasant consequences arose, but that the bleeding had removed the pain, irritation, and sense of weight which previously existed. Upon reflection it struck him that an instrument might be made to relieve the turgidity, which formed so unpleasant a symptom, by scarification; and he had since employed the operation in several cases with far more benefit than he had ever seen follow the use of leeches. The quantity of blood obtained in this way could be increased to 4 or 5 ounces, by placing the patient in a warm bath immediately after the operation. It was worthy of remembrance that the incisions gave rise to little or no pain, as was generally the case in cutting internal organs.

At a subsequent meeting of the society, (February 25th,) Mr. C. exhibited the instrument employed by him for scarifying the prostate and urethra. It consists of a silver catheter of the ordinary size, in the tube and extremity of which is fixed a small double edged probe-pointed blade. When the catheter is introduced into the prostatic part of the urethra, this cutting part can be thrust out and drawn back by its attachment to the stilette of the catheter; the extent of the protrusion being regulated by a screw. [The safety of this means of local depletion will have, we conceive, to be established by further experience.]—*British Annals of Medicine, Feb.* 10, *and March* 3, 1837.

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41. *Section of the tendo achillis in the treatment of club-foot.*—This operation was first performed under the direction of Thilenius in 1784, and has been since repeated by Sartorius, Michaelis, Delpech and Stromeyer. Two cases successfully treated by the latter surgeon by this means were noticed in a preceding number, (November 1834, p. 247.)

M. Bouvier has recently communicated to the Academy of Sciences of France a memoir on this subject, in which he relates three cases successfully operated on

by himself and one by M. Roux, and two others which he has still under treatment.

The operation of M. Bouvier differs slightly from that of Mr. Stromeyer. He introduces under the skin covering the tendon a needle with a cutting edge, by means of which he divides the tendon entirely, cutting from the cutaneous surface towards the bone. The external puncture, which is scarcely apparent, soon heals. The foot is drawn in a few days to its natural position; and the re-union of the tendon takes place in a few weeks without the occurrence of the least inflammation.

This process is principally applicable to those cases of club foot, called *pied equin*, which have been of long standing, and in which the employment of machines is often insufficient and even dangerous.—*Journal Hebdomadaire 17th of September*, 1836.

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42. *Painful crepitation of the sheaths of tendons.*—The *Gazette Médicale* of 20 June, 1835, contains an interesting memoir by M. Poulain, on this affection.

Boyer was the first who called attention to this complaint, but he spoke of it so cursorarily as to obtain for it but little notice. Velpeau, in 1818, described it very precisely, and since that period, various accounts of it have been published; but as it has not yet found a place in any surgical work some account of it may prove interesting.

The wrist and ankle joints, as every one knows, are surrounded by a number of tendons, many of which are furnished with peculiar aponeurotic sheaths, confounded above and below with the fibrous envelope of the muscles of the limb. These aponeurotic sheaths are the seat of the disease of which we speak; in most cases it is produced by forcible and long-continued tension of the tendons themselves; at other times by external violence; it is also most frequently seen in persons whose trade requires violent flexion or motion of the wrists and fingers, as in washerwomen, locksmiths, masons, wood-cutters, &c.

The principle symptoms are, a swelling, of variable form and dimensions, along the affected parts; pain and redness of the skin, and particularly a crepitation, which sometimes resembles that of fracture so closely that the best surgeon may be mistaken in his diagnosis if he pays too much attention to this latter symptom. The swelling, which rarely exists to any considerable extent, is usually very sensible, but in some few cases so slight as not to be perceived without a minute examination. The pain is most slight when the limb remains at rest, but is always augmented by motion of the limb, or whenever the surgeon presses upon the part, or communicates any motion to the inferior extremity of the limb; the tumour also is usually prolonged a little along some one of the aponeurotic sheaths, but no deformity whatever of the member can be observed. But the most important symptom, in fact, the pathognomic sign of the disease, is a crepitation generally resembling that heard in the first period of pneumonia, but on some occasions sufficiently strong to be mistaken for the noise produced by rubbing together the two fragments of a broken bone; it is, however, in general, much more feeble, and, according to M. Velpeau, resembles the sound produced by walking in a hoar-frost, or over snow when it has frozen. The only disease with which the affection we now speak of is liable to be confounded, is the straining of the ligaments about a joint or a fracture. In some of the former cases we find a kind of crepitation, and it is highly probable that here the two diseases coexist; besides, any error cannot be of practical consequence. Fracture of the inferior extremity of the radius has, it would appear, been frequently confounded with the tendinous crepitation. It was upon an occasion of this kind that M. Velpeau had first an opportunity of remarking the affection. It occurred at the Hospital of Tours in 1818:—

A young cabinet-maker came to the hospital to have the splints arranged which a surgeon had applied for supposed fracture of the radius. On removing the dressings, M. Velpeau wished to ascertain the existence of the fracture, and on moving the thumb was soon convinced that the crepitation alone had given rise to the idea of a fracture, which did not exist. However, a careful comparison of the symptoms will in a great majority of cases suffice to prevent any error. As crepitation of the tendinous sheaths is a slight affection, and constantly is re-

moved by rest, compression, and the use of resolvent applications, no opportunity has as yet occurred of ascertaining its exact seat, which is probably in the synovial membrane, and not in the fibrous tissue itself.

The treatment of this disease is sufficiently simple. When the pain is considerable, and joined with some redness of the skin, it is natural to apply leeches; antiphlogistics do not seem to have much effect. The most successful treatment consists in the application of a roller round the swollen part, drawn moderately tight, and moistened with some camphorated spirits of wine, or any other resolvent; by this means the swelling, pain, and crepitation, generally disappear in a week or two.

This affection, though one of frequent occurrence, has not, as far as we remember, been made the subject of any communication in any of the English or American periodicals. M. Velpeau cites from twenty-five to thirty examples, which he has already met with in the sheath of the peritoneal muscles, extensors of the thumb, radial extensors, and extensors communis digitorum; and cases are now to be seen daily at the consultations of all the hospitals. In two cases treated by M. Velpeau in 1831-2, the disease terminated in a fungous degeneration of the tendinous sheaths of the phalanges.

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43. *New method for the operation for aneurisms.*—An Italian surgeon, Dr. Sarra, has proposed a new operation for the cure of aneurisms, which he terms *mechanical obliteration.* It consists in making a longitudinal incision in the artery through which a cylinder of gum elastic, about two inches, is to be inserted. We need not give further details for the operation, as no one, we presume, is likely to put it into practice.—*Gaz. Méd. de Paris, 10th Sept.* 1836, from *Osservat. Medico.*

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44. *Lithotrity performed on a child.* M. Segalas exhibited to the Academy of Medicine at their meeting on the 4th October last, a child, who, at the age of two years, exhibited symptoms of stone. When thirty-three months old, Mr. S. operated on him by lithotripsy, and in six operations, performed during a period of six weeks, the patient was perfectly cured. This is the youngest child as yet subjected to the operation. The stone was eleven lines in diameter.—*Journ. des Connaiss. Med. Chirurg.* Dec. 1836.

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45. *Chronic Vessical Catarrh treated by injections.* M. Duvergie, Senr., lauds the powers of balsam copaiba administered by injections into the bladder for the cure of catarrhus vessicæ. He employs it in doses of from 1 drachm to 2 ounces mixed with barley water. He recommends that emollient injections should first be made with a graduated syringe, in order to ascertain the capacity of the bladder, and its degree of irritability. When this organ is very irritable, he combines narcotics with the balsam. The following is his prescription—℞. Laudanum 3j.; Bals. Copaib. 3ij.; Decoct. Hord. ℥ij. The whole, or half this quantity, is injected into the bladder, and allowed to remain 10 or 15 minutes or more. If this does not produce too much excitement, the quantity is gradually increased, and the injection is allowed to remain longer in the bladder. If the bladder is extremely irritable, emollient injections must be first used, then opiates added, and finally the balsam. The emollient and narcotic injections should be renewed three, four, or five times a day; the balsamic daily, or once in two days. Ten cases are related in which this treatment was pursued.—*Gaz. Med. de Paris, 1 Oct.* 1836. [This remedy was, we believe, first proposed by Dr. Souchier, of Romans, (*Annales de la Med. Phys.*) and was successfully employed by him in one case.]

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46. *Case of compound dislocation of the astragalus and os naviculare.*—Mr. C. M. Burnett relates in the *Lond. Med. Gaz.* (12 Nov. 1836) the following interesting case.

"Colonel G—— is an active man, of a spare habit of body, upwards of 60 years of age. On the 23d of February last he was fox-hunting, and had made a leap, when suddenly he found himself unable to follow, in consequence of his right foot being displaced. His usual habit was to ride in his stirrup, the foot resting on its outer side. When I first saw him the boot had been removed, which from the force of the injury, had given way, the bone protruding through it. The foot was dislocated inwards, at right angles with the leg; and two bones were plainly to be

seen projecting out of a wound, which was about three inches in length, extending across the outer ankle.

"I carefully examined the situation and shape of these bones: the upper one, the os naviculare, had projected its cuneiform surface outwards and forwards, in an oblique direction; and the other bone was the astragalus, which had forsaken its natural cavity, was driven forwards and outwards, and presenting that surface which in its natural position would be in contact with the os calcis. I steadily kept pressure as firmly as I could, for nearly a quarter of an hour, upon the prominent os naviculare, in the direction of the joint, to which I was directed by the end of the tibia, which was plainly to be seen beneath the astragalus. At the expiration of this time I had the satisfaction to see the bones slip into their proper places, and the foot resume its natural character. The end of the fibula was not fractured. Having placed the limb in proper splints, I conducted him home, where he was met by his family surgeon, Mr. Wickham, of Winchester, in whose able hands I had every satisfaction in knowing it would be watched with an active and intelligent eye. The case has done remarkably well; and by a letter which I have received from Mr. Wickham, he tells me—"I am able now to inform you that Colonel G——'s case has been brought to the most satisfactory termination. The wound is healed, the motion of the joint is perfect, and the swelling of the part is nearly reduced. Weakness, which time only can remove, and the occasional puffiness from use, are the only remaining effects of the injury. You are aware that the progress of the case has scarcely been interrupted, and that inflammatory symptoms only once occurred during the period of his confinement; these were ushered in by a rigor and succeeding heat; they occurred about three weeks after the accident, and only lasted a few hours. At present he is able to walk with crutches, without the least inconvenience, and the limb bears occasionally its share of the weight of the body. As to the motion of the joint, it cannot only be performed by myself, but he can freely bend and extend the foot."

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47. *Ligature of the subclavian artery.*—Dr. Philip Montani, chief surgeon of the military hospital of Capua has recorded in the *Osservatore Medico* a case of traumatic aneurism of the axillary artery successfully treated by him, by the application of a ligature to the subclavian. The case offers no particulars of special interest, but the instances of ligature to the subclavian are sufficiently few to render the fact worth recording.

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48. *Observations on the nature and treatment of Ganglion.* By Aston Key. The power which tendons have of forming bursal cysts, when they are exposed to extraordinary pressure or friction, is one among the many resources possessed by organized structures, to prevent the occurrence, as well as the consequences, of inflammation. It would seem that ganglia are not merely diseased bursæ mucosæ; for the former are found in parts where, in a state of health, bursæ do not exist. I look upon them as new structures, formed upon tendons, as pressure or friction, or undue exercise of a part, may call them forth. On the patella the presence of a bursa is accidental: it is not always met with in dissection; and probably its formation may depend on the exertion which the ligamentum patellæ has to undergo, or the pressure which it may have to sustain, in the frequent act of kneeling. The contents of a ganglionic tumour differ from those of a common bursa mucosa. The latter secretes a fluid like ordinary synovia, for the purpose of lubricating the tendon: the ganglion most usually contains a substance like the outer layers of the crystalline lens, soft, viscid, and nearly solid. These crystalline ganglia, as they might not improperly be called, are frequently formed about the hand, especially on the extensor tendons, as they pass over the carpal bones; less frequently on the lower part of the theca containing the flexor tendons of the fingers, forming small but sensitive swellings near the metacarpus. They also are occasionally seen on the extensor tendons of the fingers where they pass over the joints, giving pain, and accompanied by a great sense of weakness in the part.

These crystalline ganglia are formed, as I have said, on the tendinous structure, and appear to consist of a double bag: the outer one tendinous and firm; the inner, like a synovial membrane, thin and secreting. In one that I examined on the tendon of the external gastrocnemius muscle, this double bag was distinctly seen.

In most instances, the outer cyst cannot be separated from the inner; the whole seeming to be made up of one fibrous bag, secreting on its inner surface.

The treatment usually adopted for those situated on the back of the wrist-joint, is, to burst the cyst by a sharp blow with a book or any other hard body. If well aimed and sharply struck, it often effects the object of breaking it down; but it as frequently fails, either from the firmness of the cyst or from the unskilfulness of the blow, or from want of sufficient resistance afforded by the wrist. It is also a painful remedy, and is occasionally productive of more subsequent inconvenience than the ganglion had occasioned. The more simple plan is, that of making a small puncture with the point of a lancet; or a cataract needle, when the tumour is small. There is no fear to be entertained of inflammation taking place; as the cyst is little disposed to inflame, and the closure of the opening, after the contents have escaped, by means of a band or piece of plaster, is a sufficient guard against its occurrence. I have never seen or known any mischief to arise from the operation of puncturing these ganglia; and their return is as equally prevented as by any other mode of treatment.*

For the small tumours that occupy the base of the palmar side of the fingers, the puncture is the only remedy. Blisters or blows are ineffectual: the former are very slow in operating, and rarely succeed in removing them; and blows cannot be struck with sufficient accuracy to ensure a rupture of the cyst. The cataract needle is the most convenient remedy: the tumour being sensitive, the patient experiences some pain in its introduction; but it is momentary, and the relief afforded is complete.

When the swelling is situated over the back of a joint on the extensor tendon, pressure should be kept up for some weeks after the evacuation of the cyst. A gentleman, who was much in the habit of writing, applied to me for a swelling of this kind on the first phalangeal joint of the right index: he complained of pain and weakness in the use of it, and was unable to employ the finger steadily in writing. A small puncture was made in it, and about a drachm of crystalline fluid escaped: a piece of riband was bound over the joint, and firm pressure was thus made on the cyst. The fluid did not collect again; and by wearing the riband for a few weeks, in order to secure and steady the finger when employed in writing, he regained the perfect use and strength of it.

I once punctured a similar swelling over the tendon of the trochlearis superior muscle of the eye; and it never shewed any disposition to return. Occasionally, the part that has been the seat of the ganglionic enlargement becomes thickened after its contents have been allowed to escape; and a slight hardness remains, but does not interfere with the use of the part.

The ganglion patellæ is a cyst formed upon the expanded tendon that invests the surface of the patella. Its structure resembles that of the other ganglions, having a dense fibrous covering lined by a secreting membrane. The secretion differs from that of the crystalline ganglia, in being fluid; probably in consequence of having less albumen in its composition. I need not enter particularly into the ordinary modes of managing such ganglia, when they become large or painful. Blisters, stimulating plasters, and pressure with a bandage, are often resorted to with advantage. The more effectual plan for dispersing them altogether, is, to puncture them with a lancet, to let out the contained fluid, and to employ firm pressure with a bandage and plaster. If this does not prove permanently successful, the seton becomes the most ready, the most mild, and the most effective remedy that we have at command.

I have frequently had occasion to employ this remedy for this affection of the knee; and can aver it to be milder in its effects, and in the annoyance it causes the patient, than the common blister. If a few threads be passed through a ganglion patellæ of one knee, and a blister applied to another on the opposite limb, the patient invariably, I have noticed, complains of more suffering from the blistered surface than from the suppuration caused by the seton: and this is in accordance with what we know of the sensitiveness of the skin, compared with the sensibility of a bursa, even in a state of inflammation. The pain complained of during the stage of acute inflammation is inconsiderable; and the moving the

* The best mode of puncturing ganglions, is probably that recommended by M. Chailly, see vol. xix. p. 257, of this Journal. Ed.

threads, during the process of suppuration, occasions but little uneasiness. Sometimes a little feverish excitement is produced by the pus not escaping freely from the apertures, which, being retained, becomes decomposed: this inconvenience is remedied by keeping the openings, where the silk enters, free and clear. The seton should be kept in for several days after suppuration is established, in order to promote granulations, and to facilitate the escape of the pus. Even where the ganglion suppurates itself, the seton may be used with advantage, towards accomplishing these two objects.

The detail of cases in which the seton was employed is unnecessary, as they resemble each other in all points of practical import. The length of time required for the complete action of the silks, and the extent of the inflammation induced by them, may vary in different individuals. Many cases have occurred in the hospital, during the last three years, in which the seton has been employed; and, on the whole, I prefer it, as being more certainly effective, and combining with such efficiency the advantage of not being severe or painful.

It is not to the ordinary ganglion patellæ alone that its use is confined. The operation of the seton is more especially adapted to the indurated ganglion. By this kind of swelling, I mean one in which, from the continued existence of inflammation, the cyst of the tumour has become exceedingly thickened by successive deposits or layers of adhesive matter or fibrine, converting the tumour into an almost solid mass.

These hardened ganglia cause great uneasiness to the subject of them; and incapacitate the person from bearing on the part in kneeling, as well as weaken the limb in the act of extension. The appearance of these tumours, when they are laid open, sufficiently indicates their manner of growth, and also the mode in which the loose bodies, resembling melon seeds, that are often found mixed with their fluid contents, are produced.

The operation usually employed for the care of such indurated cysts on the patella and its ligament, is excision of the entire mass. The operation is easily performed, does not involve the joint in danger, and is effective in removing the disease. When the tumour is small, the operation is quickly performed; but if it be large, and overlap the synovial membrane, a surgeon cannot divest his mind of all risk of wounding the capsular ligament, especially if the base of the cyst be adherent to the subjacent fascia; and the operation requires some cautious dissection. Fortunately, the seton is equally successful in promoting suppuration of the cyst, as it is in the smaller and soft ganglia. But the most gratifying result is the entire disappearance of the hardened coats of the cyst by absorption. The indurated parietes appear to be produced, and to be kept up, by the irritation of the bag; which being filled up by the inflammation and suppuration established by the seton, ceases to act as a cause of irritation, and the absorbents set to work for the removal of the walls of the tumour.—*Guy's Hospital Reports, No. III.*

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49. *On the employment of Kreosote in Cancer and Lupus.* By J. R. Cormack.—Reichenbach, Graefe of Berlin, Cloquet, and others to be noticed, state that they have employed it with great advantage. Graefe in his surgery gives a case of very extensive cancer of the face and palate which was much improved by kreosote; and M. Breschet announced to the Academy of Medicine in Paris, during last year, that he had employed this remedy in a case of cancerous ulceration of the nose, in the Hotel Dieu, with great benefit. M. Tealier applied a saturated solution of kreosote in water to an open cancer situated in the breast of a woman, who was suffering most excruciating pain from it, and it was with a view of alleviating this that he employed the kreosote. The result is interesting. No sooner had the solution come in contact with the ulcerated surfaces, than the patient complained of an acute burning pain in the sore, shooting through the right side of the chest, and extending from the head to the very tips of the toes. This continued for an hour, after which the pain entirely ceased, and the patient enjoyed uninterrupted sleep for ten hours. Subsequent applications uniformly allayed the pain, and under its use the sore assumed a more satisfactory appearance. The same gentleman has used it in various affections of the neck of the uterus. In one case he applied a mixture of one part of kreosote to three of water to an ulcer in that situation. The pain which was immediately produced was of such a nature as to cause the woman to toss about in bed like one in convulsions. To

alleviate her sufferings, he ordered injections of cold water, but the pain did not wholly leave her till the second day, when she was quite free of it, which had not been the case for two months before. The kreosote was continued, but was afterwards used in a less concentrated form, and the patient was doing well, when he reported the case to the *Societé de Medecine* of Paris. These cases are interesting from the remarkable effects immediately produced, but are of little importance in enabling us to decide upon the value of kreosote as a remedy in cancer, from their imperfect state. M. Marchal has published a case of cancer of the lip, in which he believes he accomplished a perfect cure by means of kreosote. The ulcer had all the external appearance of cancer, and was attended with the lancinating pains so characteristic of that malady. Besides applying to its surface lint soaked in pure kreosote, he occasionally touched it with caustic; and under this treatment the sore cicatrized, and the lancinating pains ceased. M. Marchal suggests the probability of the caustic inducing the ulcer more readily to take on a healing action under the use of the kreosote, but ascribes to the latter the chief merit of the cure. He states that the application of the pure kreosote occasioned at first very acute pain, and this is the most common occurrence, though it is by no means uniformly to be looked for. In consequence of reading the above case of M. Marchal, I was induced to try the effects of the application of pure kreosote in lupus of the nose. The size of the affected part was rather less than half a sixpence, and had been very slowly increasing for about three years. Upon applying kreosote to this surface, the patient experienced no uneasiness. For about a week it was dressed with lotions of kreosote water, and from time to time touched with undiluted kreosote. For a day or two no change seemed to take place; but after this, the parts surrounding the sore became inflamed, and at the end of the week the ulcer was decidedly larger than previous to the application of the kreosote, and in consequence of the obvious injury done by the treatment it was abandoned.

Professor Wolff of Berlin tried the effects of injections of kreosote water into the vagina, in two cases of cancer of the *uterus*. In both instances, violent pain ensued, and one of the patients was obliged, on this account, after nine days, to refrain from employing it, and the other, after persevering in its use for twenty-six days, was compelled from a like cause to desist. In neither case was there any diminution of the secretion or of the metrorrhagia. One of the patients expired after violent metrorrhagia, but the other died more slowly.

During last summer I saw it tried in the clinical wards of the Surgical Hospital by Professor Syme, in a dreadful case of lupus. The fœtor of the discharge, which was before very great, seemed to be corrected, but besides this, there was apparently no good effect produced. The case, however, was so very bad, that no application could be expected to benefit it,—the articulation of the lower jaw being exposed on one side, and an immense surface involved in the disease.—*Edinburgh Med. and Surg. Journal, Oct.* 1836.

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50. *Treatment of Hydrocele by Acupuncturation.*—Mr. Lewis recommends puncturing hydrocele with a *very fine needle*, until a drop of fluid oozes out on withdrawing the instrument, and he says that in three days the hydrocele will completely disappear, no matter in what quantity the fluid may have been collected. Out of upwards of 50 cases treated by Dr. L. by this method, he says there has not been a single instance of failure, neither has there been any consecutive inflammation.

"It may seem almost incredible," he says, "that a single puncture with the point of a fine needle into an encysted cavity, is sufficient to cause the absorption of the fluid contained therein, but such is the fact. I have punctured an enormous double hydrocele, complicated with rupture; the volume was so great that the penis could not be seen; yet by a single puncture on each side, in three days the fluid had entirely disappeared, and the parts had regained their original size. The simplicity of the operation is such, that I have seen medical men afflicted with hydrocele fearful of having it punctured (through want of confidence in the resources of nature,) lest it should prove a failure, without the aid of the trochar and canula.

"The principle of puncturing with a fine pointed needle is not only applicable to promote the absorption of the fluid in hydrocele, but in every case of *encysted*

dropsy. My worthy and talented friend, Dr. T. Davies, of Broad-street, has lately informed me that he had explored the chest with a grooved needle, in order to convince operating surgeons of the existence of fluid, previous to resorting to the operation of paracentesis thoracis. Having ascertained that fluid existed, he found, to his surprise, that the patients got well by means of the puncture, without having recourse to the usual operation; and so successful has he since been, that he never now employs any other method of emptying the cavity of its fluid. On the same principle the needle may be used with safety and success in many cases of hydrocephalus, and, perhaps, in some tumours.

"In hydrocele the accumulation of water proceeds more slowly after puncturation than after the more sudden emptying by the trochar and canula. Acupuncturation, as hitherto practised, both abroad and in this country, has been on the principle of counter-irritation, and as an agent to give discharge to the water in cellular dropsies. The acupuncturation needle is much larger and rougher than the one I use in the treatment of hydrocele by puncturation; in fact, the needle cannot be too fine, provided it be strong enough to penetrate through the integuments, for the smaller the puncture the less pain and inflammation ensue."—*Lancet*, 7 May, 1836, and 14 Jan. 1837.

The claims of originality of Mr. Lewis to this practice has been contested by several surgeons. Mr. Kingdom stated at a meeting of the London Medical Society, that he had employed the same means several years ago, and that it appears to have been the usual practice of a German surgeon who resided some years ago in London.

Mr. Travers also in a letter in the *London Medical Gazette*, (Feb. 11, 1837,) claims the conception of the same plan, whilst Mr. Robert Keate, in a communication in the Journal just quoted, (Feb. 18, 1837) states, that the plan and the practice have been known and acted upon by himself, for very many years, and probably by others. By one other person, he adds, he knows that it was performed, perhaps 20 years ago. This person was a physician, and practised the operation on himself. "At his suggestion," says Mr. R., "I tried it frequently, both at the hospital and in private practice.

OPHTHALMOLOGY.

51. *Treatment of gonorrhœal ophthalmia.*—M. Sanson having found antiphlogistics alone, ineffectual for the cure of gonorrhœal ophthalmia, has adopted the following method of treatment:—He first bleeds to the extent of 24 to 30 ounces; if this is followed by marked benefit, he repeats the bleeding, and applies a great number of leeches around the orbits of the eyes. But if the ophthalmia instead of diminishing, remains stationary or gets worse, M. S. abandons antiphlogistics, and has recourse to excision and cauterization, which he employs in the following manner: The patient is laid upon a bed, and his head fixed on a pillow by an assistant; another assistant separates the lids and everts them. The surgeon seated in front of the patient, then seizes with dissecting forceps, the prominent portions of the ocular conjunctiva, and excises with curved scissors, as completely as possible, all the swollen portions of this membrane as far as the point where it is reflected upon the globe of the eye. The blood is now allowed to flow; the parts are afterwards carefully washed and a pencil of nitrate of silver is then *slowly* passed over the whole external surface of both eyelids, which are kept everted. The parts are then carfully washed with water to remove all portions of caustic which not having combined with the tissues might act upon the cornea, and the lids are then replaced. The subsequent treatment consists in bleeding, pediluviæ, cold applications, &c. The pain which at first is extremely severe, is soon assuaged.—*Journ. de Méd. et de Chirug. Prat.*, October, 1836.

52. *Amaurosis cured by electro-puncture.*—Dr. Rosas in his report of the Ophthalmological clinic of Vienna, during the session of 1832-3, gives an interesting case of complete amaurosis, occurring in a tanner 47 years of age, of 16 years duration,

and preceded by violent pain in both eyes, cured by electro-puncture. This patient entered the hospital in 1832, and was so much improved by acupuncture, as to be able to distinguish light from darkness. The treatment was now interrupted for two months, on account of the vacation, and on the 11th of October the supra-orbital nerve of the right side was acupunctured. During the operation the patient perceived some sparks in the eye, and on the 11th, when it was repeated, he felt a slight shivering along the vertebral column. On the 13th the left, on the 14th the right supra-orbital, and latterly the infra-orbital nerves, were acupunctured. These were followed by sparks in the eyes and shivering along the spine. On the 17th the galvano-punctor was employed, for the first time, and four plates of Volta's pile were used. The same nerves were touched, and after four minutes the patient felt some febrile *frisson* sparks in the eye, and a flow of tears. On the 19th, after a similar operation on the right side, the patient began to see. On the following morning, the inner moiety of the visual field was somewhat troubled, but within ten hours this phenomenon diminished, and towards evening the patient, to his great joy, could distinguish all large objects.

On the 21st the operation was repeated on the left side for two minutes and a half; his eyes continued watery for the whole day. On the morning of the 22nd, all objects were covered with a thick veil, but this soon went off, and the patient could see so clearly with both eyes as to distinguish a small silver coin. The galvano-puncture was reapplied from time to time during the months of November, December, and January. On the 11th of February it was carried to twenty-six plates of the pile; at this time the patient was fully able to distinguish small objects, and even their colour, &c.—*Lancet*, Aug. 22, 1836.

MIDWIFERY.

53. *Case of spontaneous version.* By Dr. Fr. Niess of Vöhl.—A healthy stout-made woman, æt. 21, who had an easy and favorable labour eighteen months previously, enjoyed good health. On the 9th of October, a period which corresponded with her own computation, she first felt slight pains, during which the waters drained very slowly, after the lapse of several hours. A midwife was called in, but the patient would not permit her to make any examination on that day; observing that the child would soon be born. During the night, when the pains had become stronger, the midwife insisted on making an examination, and, having discovered an arm-presentation, advised her to send for me: this, however, was not done until the following day at noon. When I arrived, about three o'clock in the afternoon, I found the left arm presenting, with the hand protruded from the vulva: the arm was greatly swollen and livid, the palm turned towards the right thigh of the mother. The os uteri had contracted on the arm, so that I could only pass a single finger round it. The womb was closely applied to the body of the child, and I could ascertain, without difficulty, that the head lay over the horizontal ramus of the pubis, towards the right side of the mother, and the feet towards the left side.

According to the midwife's account, the pains had been for several hours violent, frequent, and extremely severe; still the arm made no progress. The general state of the patient was favourable: she merely complained of considerable thirst, and expressed great anxiety about her condition. As I could not think of turning under such circumstances, I proceeded to take proper steps to diminish and regulate the pains. Having premised venesection, as the patient was very robust and plethoric, I gave repeated doses of aqua lauro-cerasi, ordered friction to the abdomen, with a liniment composed of olive-oil and tincture of opium, and tepid oleaginous injections to be frequently thrown up the vagina. Under the continued use of these means, the pains appeared, after the lapse of two hours, to diminish in intensity and severity, and the os uteri had become more yielding; and, as the woman became every moment more impatient and more importunate for assistance, I decided on attempting to turn the child. But, on this and subsequent trials, I found it impossible to pass my hand into the uterus; the irritation produced by attempting to introduce it renewed the pains, and the os uteri was so

powerfully contracted on the arm of the child, that a forcible introduction of the hand would have been attended with great risk of rupturing the uterus.

Under these circumstances, and when I found the uterus began to grow more sensible to the touch, I determined to have the advice of another physician, and went to a neighbouring house for the purpose of sending a messenger to him. On my return, somewhat less than an hour afterwards, I was surprised to find the state of things greatly altered. The swollen livid arm, along with the shoulder, had been pushed forwards considerably, and the back had entered the pelvis. With strong pains, accompanied by convulsive tremors of the limbs, the back continued to descend for a quarter of an hour, while the shoulder remained fixed beneath the pubis; and a few minutes after the buttock was evolved, sweeping out under the back with a circular motion. The lower extremities came away almost at the same instant; soon afterwards the trunk, arms, and head; then the placenta, the expulsion of which was followed by a moderate discharge of blood, which soon ceased. The child arrived at its full time, and of very considerable size, exhibited no sign of life: the left shoulder, and the parts in its vicinity, were greatly swollen and ecchymosed. The patient went on favourably afterwards, the external parts of generation were at first very much swelled, but she was able to leave her bed on the sixth day.—*B. and F. Med. Rev.* Jan. 1837, from *Neue Zeitsch. für Geburtskunde*, B. iii. H. 3.

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54. *Case of Tubal Pregnancy.*—Dr. Drejer, of Copenhagen, has recorded an interesting case of this in the 15th Vol. of *Siebold's Journal of Midwifery* The subject of it was a mason's wife, aged 33, the mother of five children, and who believed herself to be in the 5th month of another pregnancy, having distinctly felt the movements of the child, though for a fortnight they had altogether ceased,—was suddenly seized, after a breakfast consisting of tea and biscuit, with a burning pain in the abdomen, speedily followed by rigors, vomiting, and great prostration of strength. A physician residing in the neighbourhood prescribed a julep to allay the vomiting, but being himself indisposed, he did not see her again. In the afternoon she was visited by Dr. Drejer, who found her in a state of syncope and with every sign of anæmia, although no blood had passed from her. On recovering consciousness, she complained of agonizing pain in the abdomen and of retention of urine. There was no distension of the abdomen, and on examination, the uterus was ascertained to be in its normal situation with the os uteri somewhat open, whence Dr. Drejer inferred that his patient was mistaken in supposing herself pregnant; and, attributing her sufferings to spasms, he directed the julep to be continued with the addition of a little musk and liq. anodyn. She died quietly an hour afterwards.

Sectio Cadaveris.—On pressing upon the abdomen, a hard rounded body was felt in the hypogastric region. Within the abdomen was observed, first, a large quantity of extravasated blood; this being removed, the placenta was discovered; it presented the appearance of a convex fleshy body, and was inserted into the middle of the right fallopian tube, which was bursted; a fœtus of the female sex, weighing 6½ ozs., and attached to the placenta by the umbilical cord, lay among the intestines. The placenta was 10½ inches in circumference. It was remarkable that the broad ligament and fallopian tube of the right side did not pass off from the uterus as they normally do, but proceeded from that part of the organ immediately adjoining the neck. It was not possible to pass a probe through either tube. The uterus, which lay in its natural position, was somewhat enlarged, the cervix filled with a white gelatinous substance, the os tincæ open, and the uterine cavity rather dilated and lined by a thick pale membrane. A corpus luteum was found in the left ovarium, but with the most minute examination no traces of one could be discovered in the right, a circumstance sufficiently perplexing, for as every conception necessarily produces a corpus luteum, and as the one found was of the size and appearance usual in the 5th month of pregnancy, it is not easy to conceive how the ovum could have got from the left ovarium into the right fallopian tube. It may be remarked that the patient in this case was subject to hysteria, and for some time had suffered from a pulmonary affection, but during this pregnancy, she had not complained of repeated attacks of pain in the belly, or of an impossibility of lying on the right side.—*Med. Chirurg. Rev.*, Jan. 1837.

MEDICAL JURISPRUDENCE AND POLICE.

55. *Action of Iodide of Lead.*—The soluble compounds of iodine are poisonous, while those which are insoluble, or little soluble, are less deteriorating to the animal frame. Anxious to know the effect of the yellow iodide of lead, M. Paton administered 12 grains to a cat of moderate size. In 4 hours the animal did not seem to experience any inconvenience: then 12 other grains were given; in 12 hours the animal became uneasy, and constantly refused every kind of food. It appeared to suffer in the kidneys; latterly it was attacked with violent colic, which caused it to jump up to great heights. It died 3 days after taking the poison, suffering dreadfully. The autopsy made 12 hours after, detected no trace of irritation; the lungs were of a pale rose colour; the stomach was empty, and contained a lumbricus; a yellow spot was observed at the pylorus; the intestines, which contained very little matter, were occupied by 3 tœniæ. Paton examined the interior of the stomach chemically, but was unable to detect any poison. He collected the fæces, the matter in the intestines; no fragment of the iodide was visible. They were then boiled in distilled water, the liquid filtered and decolorized by charcoal, but no effect was produced by tests for lead. The matter remaining in the filter was digested in dilute nitric acid; the solution was filtered; a precipitate was obtained on pouring in a solution of chromate of potash. The liquid was evaporated; the residue calcined along with what was left by the evaporation of the water, and the whole brought in contact with dilute nitric acid. Nitrous gas was disengaged, and the solution acted to re-agents like the solution of the salts of lead. Hence Paton concludes, that the iodide of lead introduced into the stomach is partly absorbed, and that it is this portion which produces death, and the remainder passing into the intestines may be detected by the methods described.—*B. Ann. Med., March 3d*, 1837, and *Journ. de Chimie Méd.* Jan. 1837.

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56. *Mode of detecting Arsenic in Bread.*—M. Paton, who has been examining this subject, recommends crumbling the bread, digesting it in hot water for half an hour, filtering, adding then an infusion of galls made in the cold; the solution is filtered, and the clear liquor tested for the arsenious acid.—*B. Ann. of Med.* Feb. 24, 1837.

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57. *Poisoning with muriate of Baryta.* The following rare case of fatal poisoning with muriate of baryta is related by Dr. Wach of Merseburg in Henke's *Zeitschrift für die Staatsarzneikunde* for 1835. The wife of a manufacturing chemist, æt. 42, in the absence of her master took half an ounce of powdered muriate of baryta, mistaking it for glauber salts, and having dissolved it in warm water swallowed the whole at once. Soon after she was seized with nausea, retching, twitching of the facial muscles, and convulsive twitching of the hands and feet, to which succeeded a violent vomiting of a muco-aqueous fluid, which the servant in attendance threw away. These symptoms continued with increasing severity, the twitching of the face and of all the limbs grew rapidly worse, and, before the nearest physician had arrived, she expired under the most violent convulsions, scarcely two hours from the time of taking the salt.

Sectio cadaveris.—The body was rather fat, the mouth rather closed, the features were distorted, and the fingers spasmodically contracted—abdomen and præcordia sunk. In the cavity of the abdomen the great and the small omentum unusually red, their vessels being filled with blood, the stomach contracted, and the vasa brevia turgid with blood—the peritoneal coat of the stomach of a dark brown colour and much inflamed. At the distance of $3\frac{1}{2}$ inches (Parisian measure), from the cardiac orifice, and 9 lines from the smaller curvature on the posterior wall, there was a perforation of the coats of the stomach of an oval form, and measuring three lines in diameter on the external surface, and $7\frac{1}{2}$ on the inner. The edges were very much swollen, and the mucous membrane for the space of two inches around was thickened and covered, not with pus, but a bloody mucus. The entire mucous membrane of the stomach was highly inflamed, and covered with mucous and coagulated blood. The muscular coat, with the exception of the place where the perforation existed, was no where softened or at-

tenuated, but in a normal state. The cardia and pylorus, the duodenum, jejunum, and ilium, were all in a high state of inflammation, the mucous membrane softened, thickened, and smeared with a bloody mucus. The small intestines contained several ounces of a brownish-red slimy fluid, mingled with clotted blood. The colon throughout its entire length was morbidly contracted, so that its calibre was even one-third less than that of the small intestine. Many broad ecchymosed patches, from half an inch to an inch in length, were observed on its inner surface. The pharynx and œsophagus were slightly inflamed. The convex surface of the liver adhered throughout to the diaphragm, and the blood flowing from incisions in this organ and in the spleen was thick and of a very dark colour. In the gall-bladder was a pale-yellow gall-stone of the size of a hazel-nut; the gall itself pale-yellow and watery. In the uterus were many little clots of coagulated blood, the blood-vessels of the ovaries turgid, the external and internal parts of generation in the virginal state. The lungs and brain were congested with thick black blood.

Dr. WACH observes that the adhesions between the liver and diaphragm, the gall-stone, the morbid condition of the gall, and the contracted state of the large intestine, in all probability existed at the time the poison was taken, and that the appearances in the uterus and ovaries might be dependent on the menstrual discharge; but, he adds, all the other morbid changes, including the perforation of the stomach, were certainly occasioned by the irritant action of the poison.—*Medico-Chirurg. Review*, Jan. 1837.

EPIDEMICS—INFLUENZA.

58. *Influenza.*—Our readers have, of course, learned through the newspapers of the prevalence in Great Britian and France during the past winter, of an Influenza, though we believe that no account from professional sources has as yet been published in this country. This epidemic commenced in London about the 1st of January, and prevailed during the whole of that and the greater part of the succeeding month. A very large proportion of the population were attacked by it, and the mortality was considerable. As in all probability it will reach this country, we have carefully gleaned from our Journals every thing in relation to it of interest which they contain, in order to satisfy the curiosity which we are sure our readers must feel for information on the subject.

59. *Debate in the London Medical Society relative to the Influenza.* January 30, 1837.—Dr. CLUTTERBUCK this evening presented to the Society a paper on the present epidemic. After speaking of the great interest attaching to the subject, the author remarked that epidemics of this kind had been known for about 300 years, and that there had probably been many before, not recorded, though it was likely that their history would be of little benefit as affording precedents for the treatment of the present general catarrh, since all epidemics were more or less modified by circumstances. In the present epidemic the great outline of symptoms was strikingly similar in the generality of cases, though variations existed in particular instances. It generally commenced with a chill, followed by rigors, then heat and dryness of the skin, sneezing, lachrymation, and pains in the head, back, and limbs, with a frequent and small pulse, white tongue, and watchfulness. It bore in many particulars a strong likeness to the measles, and the author had occasionally expected to see the eruption of that disease in cases which occurred in children, but of course he did not detect it. In some patients there was sore throat; in more severe ones, vomiting and delirium; and in one case he had seen actual phrenitis. The symptoms, however, were, generally, slight and trivial, like those of common catarrh, generally lasting ten or twelve days. If the bed was kept for a couple of days a perspiration broke out, and the case went on well. The nature of the disease, he should say, was specific, arising from a specific cause—using the word *specific* to distinguish it from common disease—taking on all the characters of ordinary catarrh, with the addition of cerebral disease. We were ignorant of the cause of the disease, but it was evidently, directly or indirectly, connected with atmospheric changes; but whether resulting from a phy-

sical change in the atmosphere itself, or from the air becoming the vehicle of some noxious matter, was a mystery. All means of prevention were, therefore, unavailable. In the *treatment*, its specific nature must not be forgotten. It *would* run its course. The object, therefore, was simply to palliate, not to aim at a cure. In the majority of cases little or no medical treatment was required, but where the fever ran high, or the pain in the head was intense, or respiration was difficult, or pain in the chest was severe, with harassing cough, a high degree of arterial excitement was denoted, requiring antiphlogistic treatment, and blood-letting, as the most effectual means, was to be resorted to. This should be employed as early as possible. Eight or ten ounces taken away during the excitement considerably mitigated all the symptoms; the pulse became slower, the skin moist, and, if the lungs were affected, that sub-acute inflammatory state which engendered phthisis was prevented. If, at a later period of the attack, inflammatory symptoms again appeared, bleeding was again to be employed, though not to the same extent as at first. Regarding the strength and age of the patient, the author did not consider that either infancy or old age opposed decided objections to bleeding, where the symptoms appeared to require it; but in those two conditions it was necessary to resort to the depletion early. He did not place much reliance on the other means which had been recommended, such as tartar emetic, mercury, or camphor. Indeed, he had seen a case in which the disease attacked a person affected with ptyalism, without mitigation of the severity of the epidemic. Blistering, after the venesection, was occasionally useful. Opium must be used with the greatest caution. In old catarrh little good could be done. True, stimulants might be employed, but to stimulate was not to strengthen. The blood, in all cases, presented the usual inflammatory characters.

Mr. Dendy observed, that, according to his experience, blood-letting, in old persons and children, did harm. The greatest cause of fatality was the quantity of mucus collected in the air-passages, producing suffocation. In one or two instances which he had seen, where every symptom of arachnitis existed, he had only depleted with a few leeches, or a single cupping glass, yet even the abstraction of three or four ounces of blood thus was not borne well. He considered that the chief object was to check the excessive secretion in the air passages. On what did that excessive secretion depend, and what was the best remedy for it? He had tried, at the expiration of two or three days, and after the use of purgatives and diluents, two or three grains of quinine, given three or four times daily, and though not so successful as he expected it would be, it, nevertheless, in some instances, did good.

Mr. Meryon had found hot-air baths, at the commencement of the attack, useful in two or three cases. He had noticed that all his patients complained of an irritable tingling about the nares, or the eyelids, during the last days of the disease. Ipecacuanha was the most useful medicine in bringing up the mucus. He had had a remarkable case of a gentleman whose body was affected with influenza only on one side. Half his tongue was furred, and he had neuralgic pain on one side of his face and body only.

Mr. Procter had suffered severely from the disease, which, in his opinion, was not inflammatory. He experienced such decided rigors at the commencement, with such a languor of the circulation in the extremities, that even hot flannels did not impart warmth to them. Perspiration followed this symptom, and spontaneously. He had also had shifting pains in some parts of the muscular system, with excessive pain about the frontal and other sinuses, much aggravated on coughing, with neuralgic pains of the face on the right side. The disease in him was intermittent, leaving him in the day, during the hurry and fatigue of business, and returning at night, and lasting until two or three o'clock in the morning. He found that various pains about the chest and throat gave way before the counter-irritation of a mustard plaister. He subsequently went into a state bordering on the typhus mitior. He took four grains of quinine three times a-day, and was quite well in a day or two. He had never bled in any case, from fear of the subsequent debility.

Dr. Clutterbuck considered that this was a mistaken fear. The typhoid state alluded to would be prevented by judicious venesection.

Mr. Howell had bled young and robust patients; and he thought that the disease was thus mitigated and shortened. Where he did not bleed, tartar emetic

and sulphate of magnesia he had found extremely useful. The cough was always much relieved by purgation. He thought that blistering was useful. Instances of sudden death had occurred in this disease, such as he had noticed in no other. Patients who appeared to be going on well in the morning, sank and died without any evident additional cause in the evening.

Mr. Bryant had been afraid of employing active depletory measures, from observing the remarkable depression of power in all cases of this affection. He did not mean to say that he had not seen a single case in which blood-letting might not have been employed with safety, but he should say, that in the generality of instances it could not be resorted to without danger. The persons whom he had seen to perish were old, and previously affected with asthma, or some other chronic affection of the lungs. He had known patients to die in the manner mentioned by Mr. Howell, but they were either children or old persons. After death the bronchial tubes were found completely filled with mucus. He feared that the recommendation of blood-letting, by Dr. Clutterbuck, would produce mischief, by causing bleeding to be resorted to too indiscriminately.

Dr. Clutterbuck said, that he had not grounded his opinion on two, or even on twenty cases. Blood-letting, when employed with sufficient caution, was as safe as it was useful, and was not to be put aside by mere negative evidence. It should not be employed indiscriminately, or it would, indeed, do harm. The objection to blood-letting arose from the want of observing a distinction between cases. Of course, he would not bleed in the chronic bronchitis of old people, in which the mucous membrane was thickened, and interfered with the respiration.

Mr. Dendy considered that no doubt existed that many cases might occur in which venesection would be beneficial. He had only employed it for one patient, a young lady, in whom pleuritis had supervened on the influenza, and in that case he felt no hesitation in taking twelve ounces of blood, and she recovered as quickly as other patients. He had witnessed the post-mortem examination of a woman who had died suddenly, as in Mr. Howell's cases, in whom there was a dark crimson hue of the fauces, with inflammation and points of ulceration in the trachea, down to the bifurcation of the bronchi. "The lungs were drowned in mucus." He had not yet lost a case, though he feared that he should lose two, one an old person, and one a child. These cases had set in since Friday week, on which day the epidemic had assumed, he thought, a worse character.

Mr. Bryant said, that the great majority of cases witnessed by him, occurred among eight hundred paupers, who laboured under mental depression, from their condition. This would effect the character of the disease. In the greater number of cases he did not hesitate to say that depletory means could not be safely resorted to. Two fatal cases had occurred in his private practice, but neither of them exibited a symptom requiring the use of the lancet.

February 6th, 1837. The debate of the evening was resumed.

Mr. Headland thought it would be well for the members of the Society to state their experience with regard to the treatment to be pursued in the present epidemic, particularly as Dr. Clutterbuck had seen so many cases requiring the lancet, while on the other hand gentlemen of very extensive practice had not met with a case requiring its use. On reflecting on all the cases which he had seen or heard of, he believed that most of the fatal cases had occurred in patients who had either lost blood, were blistered, or subjected to active depletory treatment, such as large doses of calomel and tartarized antimony; and that few had died when these agents had not been resorted to. He alluded to blisters, more particularly with regard to children, as he had seen two cases in which mortification had come on after their application for the present disease. The plan he had pursued with the greatest success was the application of mustard poultices to the more urgently affected parts, keeping the patients in a warm atmosphere, attention to the bowels, and the after use of hyoscyamus.

Mr. Jones considered that the great difference of opinion respecting the affection might be accounted for easily. In this epidemic, as in typhus, cases occurred in which some particular organ became inflamed and required blood-letting; the difference was as to the number of such cases. Dr. Clutterbuck had seen many, other practitioners few, or none. The majority of cases, however, were undoubtedly slight.

Dr. Bureaud Rioffrey could hardly think the disease so slight, the great in-

crease of deaths in London he thought proved the contrary. He had only bled in one case, in which there was evident phrenitis; he had taken blood in two successive days, and the patient did well, with the after use of diluents. In five cases of asthma, coming on with the influenza, digitalis he had found of great service. There was no general plan of treatment to be laid down, as the cases varied so much. He inquired the experience of members in the pathology of the affection.

Mr. Proctor considered the affection rather as a disturbance of the nervous than the sanguineous circulation. He had seen no case in which there was any thing like phrenitis;* there had been, in some instances, great irritation of the lungs, such as is observed in measles, but not such as required the lancet. He had depended chiefly on tartar emetic and ipecacuanha in small doses, for keeping up that perspiration which appeared the natural outlet to the disease. He considered that if patients generally got well without "blood-letting," such fact was positive, and not "negative, evidence" against the lancet.

Dr. Stewart considered opinions did not vary more than did cases. In this epidemic he had seen few cases in which venesection would be borne. He had, in some cases in which pleuritis had come on after the state of asphyxia, employed a few leeches with advantage, but he had gone no further with depleting measures. The first symptoms of the disease had been well compared to the measles; he considered the secondary ones partook very much of the character of hooping-cough. As a general rule he considered active treatment was not necessary, but rather an attentive watching of the case.

Mr. Kingdon had not seen the affection to the extent some of the members had done. He considered, so far as his experience went, that it could scarcely be spoken of as a disease at all; but as some atmospheric influence, materially depressing the powers of life, and bringing into action those maladies which individuals had a tendency to suffer, accompanied, in all cases, with fever and catarrh. Generally, from the depressing nature of the affection, blood-letting was not required, but in some cases it would be found necessary to employ it to a small extent. Dr. Clutterbuck advocated the cautious abstraction of small quantities of blood only in severe cases in their early, excited stage, and no doubt he had found such treatment beneficial.

Mr. Clifton said, that so far as his experience went, the present epidemic did not bear bleeding well. The discrepancy of opinion regarding treatment, most likely resulted from the difference in cases. Dr. Clutterbuck was likely to meet with severer cases than the general practitioner, and this might, in some degree, account for the active treatment he had employed. In the epidemic of 1833 he (Mr. C.) had taken blood in only two cases, and these were longer in recovering than others. He had not found it necessary, in the present instance, to bleed in any case. He was inclined to think the disease might vary in different localities; in his district (Islington) the disease assumed a milder aspect than in situations near the water side. In the general plan of treatment he had ordered resort to bed for 48 hours, with small doses of antimonial medicines, diluents, and attention to the bowels. After proceeding with this during that space, a slightly-sustaining plan he had found useful; the cough did not contraindicate such treatment; he had found it with characters more resembling spasmodic asthma than ordinary catarrh. He had been careful of checking the cough with opiates, as he considered it rather useful than otherwise. The pains in the head, which were chiefly confined to the frontal sinuses, he had found give way before the simple fomentations of warm water. In some cases, of course, inflammation might supervene on some of these symptoms, and require depletion; he had not, however, in any case he had treated, found such to be the fact.

Mr. Bryant had examined only five fatal cases. In all their minute divisions, the bronchial tubes were full of a viscid secretion. In cutting into the tubes, the mucous membrane was found thicker and higher coloured than usual. There was emphysema of the lungs, and in one or two cases solidification. He could well suppose that cases might occur in which depletion might be necessary, but he had not seen such. He had seen in many cases, where the lungs were over laboured, the administration of calomel with ipecacuanha very beneficial, regulating their continuance by cautiously watching their effects.

Mr. Moore had adopted the plan of treatment recommended by Sydenham, and

* Dr. James Johnson states that he has seen phrenitis attendant upon the epidemic.—Ed.

pursued in the epidemic which prevailed in his time. He, (Mr. M.), had treated it as a remittent fever with catarrh. In simple cases, the use of sudorifics and tonics he had found successful; but where the lungs in aged persons had been previously affected, or were clogged with mucus, calomel combined with elaterium he had found of great service. The most violent case he had seen was that of a lady 65 years of age; in that case her physician had given her five grains of calomel, with half a grain of elaterium; she was in a dreadful state, her lips were blue, her countenance injected and suffused, and her pulse intermitting, as though she was dying. Next day she evacuated about half a gallon of watery fæces, and soon recovered. He, (Mr. M.), considered that the affection might generally be treated as remittent fever; the tonic plan might be resorted to early. He had found quinine the best tonic. He had seen no fatal cases except those which were complicated with diseased heart.

Mr. HEADLAND had blamed *large* doses of calomel and antimony. He did not say that medical aid was of no good, but that, in very numerous instances, persons had recovered without any assistance from medicine. He was glad to find that the general opinion of the Society was in favour of the affection not being of an ordinary inflammatory kind, and that bleeding in general was neither safe nor called for. He did not conceive the mortality had been so great as did Dr. Bureaud, considering the immense population of London.

Dr. WHITING, in the first place, referred to the prevailing opinion, that the epidemic depended altogether on atmospheric influence. He would not deny that it might have originated from such cause, but it was not kept up by it. It did not occur in different places at the same time, but had a progressive character; for instance, it appeared and was very prevalent in the Borough of Southwark, some days before it had reached Kensington, and when most prevalent in the latter place, had entirely ceased in the former. It spread from place to place, and, like other epidemics, he considered that when once established, it was spread universally by contagion. The disease was essentially of an inflammatory character. It was a fever accompanied with inflammation, generally in the mucous tissues, but he had occasionally seen it affect the serous tissues. The inflammation, however, was not of the common character, but one *sui generis*, and requiring a particular kind of treatment. It was a disease which would run its course, and could only be palliated, not cured, by art. He should say, speaking generally, and from his own experience, that it was a mild disease. The mortality which had taken place, appeared to be dependent upon two causes, First, a congested state of the membranes of the bronchial tubes, or air cells, obstructing the circulation. The second consisted in the obstruction to respiration produced by the excessive secretion of mucus. He had not seen death result from other causes; and in no instance from "simple debility." In some cases he had found blood-letting absolutely necessary and successful in the congestive state; it was, therefore, when cautiously employed, in some cases of great benefit. He had bled in six cases and none had died. Auscultation was valuable as a means of forming a prognosis in the affection; he had found, when one lung was affected, the patient likely to recover, but when both were involved he generally perished.

Mr. CLIFTON could not agree that the disease was contagious; he had seen whole families simultaneously affected, if any member escaped at first, he generally escaped altogether.—*Lancet*, Feb. 18, 1837.

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60. *Notice of the Influenza of January and February*, 1837.—The following summary drawn up by Dr. John Clendinning, of what was observed in the practice of the St. Marylebone Infirmary, with regard to this epidemic, appeared in the *London Medical Gazette* of the 18th of February last.

"*Progress of the epidemic.*—The first cases of influenza admitted into the Infirmary, and noted in the official journal, occurred January 2nd.

Cases admitted in week ending 6th January	16	
Ditto, ditto, 13th	64	
Ditto, ditto, 20th	66	
Ditto, ditto, 27th	46	
Ditto, ditto, 3d February	32	
Ditto, ditto, 10th, about	20	Total, 244

"By a statement with which I have been favoured by my friend, Dr. Boyd, of

the St. Marylebone Infirmary, it appears that between Monday, January 9, and Saturday, February 4, 414 cases of influenza were admitted on the out-patient home-list, viz:—Week ending 14th January - - - - - - - 161
Ditto, 21st - - - - - - - - - - 139
Ditto, 28th - - - - - - - - - 84
Ditto, 4th February - - - - - - - 34

"And the workhouse practice and morning out-patients' practice advanced numerically, and receded apparently along with the Infirmary and home practices. So that the epidemic would appear to have begun with January, and declined in about the usual period of 5 to 6 weeks.

"*Symptoms.*—Of course, amongst such a number, various combinations of symptoms must have happened. Confining my remarks to those that were admitted into the Infirmary, of whom only I had personal cognisance, I should say that the cases varied principally according as they were simple or complicated,—the former being tolerably uniform in their symptoms, the latter various as the complicating diseases. Of the former the symptoms are familiar, and require no detailed description from me, viz. at first chilliness, lassitude, and depression or anxiety, followed in some hours by more or less of heat, gravedo, head-ache, coryza, pain of back and limbs, soreness, sometimes extreme, of the chest and throat, with cough, smart fever, often coated tongue, nausea, and vomiting; sometimes gastro-enteritic irritation, with diarrhœa; occasionally transient delirium; generally wandering pains of trunk, especially about the sides. Such were the principal symptoms of the uncomplicated cases for twenty-four, thirty-six, or forty-eight hours after admission; after which expectoration became easier, the skin softer and moister, and cough and headache less troublesome, when the fever gave way, so that in three or four days nothing but weakness, with a tiresome cough, remained in a majority of instances,—a weakness, however, greatly disproportionate to the duration or danger of the disease. Two-fifths of the cases noted as influenza by the house-surgeon were of the kind just glanced at; the remaining three-fifths were complicated as follows: viz. with

Pleuropneumonia - - - - - - - - - - - - -	36
Bronchitis, mostly chronic, and combined with Emphysema Pulm. and Morb. Cord.	52
Phthisis - - - - - - - - - - - - - - -	25
Pleuritis - - - - - - - - - - - - - -	5
Fever, in several instances Typhoid - - - - - - - -	25
Rheumatism, Chron. - - - - - - - - - - - -	2
Morb. Chron. Ventriculi - - - - - - - - - - -	3
Croup - - - - - - - - - - - - - -	3
Ptyalism - - - - - - - - - - - - - -	1
Encephalitis - - - - - - - - - - - - -	1
Morb. Chron. Cord. - - - - - - - - - - - -	3
Pericarditis - - - - - - - - - - - - -	1

"Of course the symptoms must have varied much in the second class, or complicated cases. In numerous instances the complicating diseases were at first so masked by the influenza, as not to be easily recognisable. Without the aid of the pleximeter or finger and ear-tube, indeed, it appeared to me nearly impossible in several cases to arrive at a safe or satisfactory diagnosis, more especially in persons advanced in life. The irregularity observed in the course of the functional signs did not in any material degree of course extend to the physical signs; so that pneumonia, phthisis, disease of the heart, and hypertrophy of the ramifications of the bronchus (or emphysema pulm, c. catarrh. chron.,) which were the most frequent and formidable complications, were generally as easily identified as usual. In every case the influenza, if distinguished at all, was readily detected, whatever its complications, if attended to within the first day or two; after that period it often, in bad cases, became absorbed in the effects of the graver complicating disease.

"*Mortality.*—The mortality with us, as elsewhere, amongst populations embracing indifferently individuals of all ages, sound and unsound, was very considerable during the period so often specified above. I do not know that any simple case was lost from influenza unaided by previous disease or subsequent complication; but so large a portion of the subjects of our influenza had previously

tuberculated lungs, diseased bronchial ramifications or hypertrophy of the heart, and the instances in which pleuropneumonia was excited were so numerous, that

We lost in the six weeks, from 31st December, altogether - - -	118
Cases, to which must be added, deaths in the infirm wards of the work-house, same period - - - - - - - - - - -	21
In the out-door practice also there were some deaths (exclusive of the mortality of the cases transferred to the Infirmary), amounting in the same period to - - - - - - - - - - - -	40
Giving a grand total mortality of - - - - - - - -	179

Table of Ages of all Cases admitted into the Wards of the Infirmary, between Dec. 30th, 1836, and Feb. 10th, 1837.

Ages of all cases.	Admissions.		Deaths of the admitted.		Influenza Cases: both sexes.
	Male.	Female.	Male.	Female.	
Under 12 months . .	5	4	1	2	5
1 to 5 years	15	5	—	—	3
5 — 10	17	24	—	1	15
10 — 20	40	33	3	2	35
20 — 30	21	40	3	5	28
30 — 40	34	26	11	4	33
40 — 50	27	27	10	7	26
50 — 60	36	25	14	8	41
60 — 70	22	30	6	10	35
70 and upwards . .	21	11	9	2	26

"*Remarks on the Table of Ages.* From the preceding table it would appear that aged persons have enjoyed no such immunities during the late epidemic as they have been found, or, for want of counting, perhaps, supposed to do in former epidemics. More than half of the cases were above 40, while a fourth part nearly were above 60. But the table represents the case too favourably for the other extreme of life, owing to the nursery and school children having usually not been so severely affected as to require hospital treatment. Another generally received opinion, however, is confirmed by our experience, viz. the potency of pectoral disease as a predisposing cause; this appears strikingly from the table of complications. For though the complicated cases were received into the Infirmary in much larger proportion, of course, than the simple cases, yet the number of the former is too considerable to be overlooked, or attributed to universality of diffusion of the epidemic causes, rather than to peculiar susceptibility in the subjects.

"I have added the deaths of all diseases, but none for influenza separately, for the obvious reason that influenza proper produced no deaths.

"Amongst the causes I have seen no reason to reckon contagion; perhaps I have not looked sufficiently, or inquired for it. Like all other epidemic diseases, the present, whether contagious or not, certainly commenced at first without contagion, and has probably, as I think, been exclusively reproduced and continued by recurrences of one or more of its first causes: what those first and essential causes are, I think with Pringle (Med. Obs. Inq. vol. vi.) is still a problem for solution.

"*Morbid Appearances.*—During the epidemic numerous opportunities presented themselves of investigating its anatomical characters; and in every instance I found that the fatal result might be attributed to previous disease, or to organic deterioration from lapse of years. The youngest was a female, 8 years old, who sank under double pneumonia supervening on tuberculation. There were a male and a female between 20 and 30; a male and a female betweed 30 and 40; a male and two females between 40 and 50; between 50 and 60 there were five males and two females; and between 60 and 70, six males and one female.

"The complicating diseases were—

Chronic disease, with enlargement of the heartand bronchial ramifications, without acute pulmonic disease - - - - -	9
Chronic disease of the heart and bronchia, with recent pleuro-pneumonia	6

Chronic disease of the heart, with phthisis (1), or recent pericarditis (1)	2
Pneumonia and pericarditis - - - - -	1
Phthisis with pneumonia - - - - -	1
Pneumonia - - - - - - -	1
Pneumonia with suppuration of kidneys - - - -	1
Pneumonia, morb. corb., and arachnitis - - - -	1

I observed nothing constant in the post-mortem appearances but extreme injection of the trachea and all its branches, and in several cases thickening of the mucous lining of the passages. But those are nothing more than are according to my observation, to be met with in a greater or less degree in almost every case of asthma, chronic catarrh, and old disease of the heart. It may be thought singular that disease of the heart should have occurred so often, much oftener than phthisis, being eighteen times out of twenty-two; and I should probably, some twelvemonths or more since, have been struck myself by such a statement. But it is undoubtedly true, that disease of the heart frequently escapes the observer who trusts to his eye as a means of admeasurement. When, as often happens, there is no pericarditis, nor any valvular disease, and when hypertrophy, if existing, is distributed pretty equally over the organ, there is a great chance of its escaping notice, unless very considerable; more especially if the inspector have defective information respecting the health of the deceased. To guard against error from that quarter, I have for some time weighed every subject inspected on account of disease of the heart, entire in the first instance, and then after a careful examination of the pectoral viscera, weighed the heart separately, after washing, and in this way have satisfied myself that amongst the labouring classes at least, hypertrophy of that organ is a still more common and fatal disorder than many or most physicians believe.

"*Treatment.*—Regarding the simple influenza cases I have little to say. With warmth, water gruel for food, and repose in bed for a couple of days, they were usually convalescent, or about to be so, whatever might be the medication employed, provided only that medication were not energetic. "Res fuit hercle diætæ potius accuratæ ac debiti regiminis plerumque, quam medicinæ elaboratæ," (Huxham de aere, &c.) like its predecessor of 1743: occasionally, however, like the epidemic just referred to, "multo plus curæ atque diligentiæ poposcit." In a great majority of cases, nearly all indeed, it was thought advisable to blister the chest, which usually gave to the bronchial irritation the relief desired. In some also leeching or cupping was cautiously employed; where the pain under the sternum was urgent, or pneumonia or pleurisy was apprehended, or where gastro-enteritic irritation was well marked. The ordinary internal medicine was antimonial mixture (gr. ½ to ʒiss.) with 2 or 3 drops of laudanum 4tis horis, which was generally found to answer well; but in several cases, probably 20, half a grain or a grain was prescribed with benefit. Purges were often called for by constipation at the commencement, and were at all times used without hesitation, according to circumstances. As soon as fever abated, animal food, beginning with broth, if not previously in use, was employed, with porter, wine, or other cordial, according to circumstances. In 15 or 20 cases saburra and oppression were treated at first with emetic doses of antimony; and frequently the ordinary antimonial mixture operating on an irritable stomach, caused vomiting, which was found to be of service ultimately, however inconvenient in some cases at the moment. I do not know that bleeding was ever employed in uncomplicated influenza, but pneumonia or other visceral inflammations originating in influenza were encountered as usual. Into the treatment of the complicated cases it is unnecessary for me to enter, partly on account of the tediousness of a detail of so many various plans, but principally because influenza, not the diseases with which it was incidentally associated, is the subject of this communication. Suffice it in a general way to say that such cases were treated variously of necessity, but always with a double regard to the graver as well as to the transient and minor disease. Pneumonia and pleurisy were the complications that most frequently compelled us to deviate from our general method, and those were encountered by bleeding, both general and local, especially the latter, blistering, antimonials, and when less tractable on account of disease of the heart, age, &c. by mercury likewise, with or without opium.

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61. *Note on the Influenza.* By RODERICK MACLEOD.—I presume that the cases I

have seen, taken altogether, have been of more than the average degree of severity, first, because they have been treated partly in St. George's Hospital, where the slighter cases were not admitted; and secondly, because a certain proportion of the others have been patients, to whom I have been called by general practitioners, who have done me the favour to ask for my assistance. Now, setting aside the mere catarrhal affections of a few days' duration, the great mass of the others which I have seen has been made up of unequivocal examples of inflammation of the air tubes. This has principally been developed in the minuter branches, but not unfrequently has extended into the trachea, and sometimes even to the larynx. The inflammation, however, has not been limited to the parts just mentioned, but in a certain number of cases has affected other mucous membranes in addition to the simultaneous participation of the air passages. Thus, taking 40 of the more severe cases, I find that 3 had well-marked symptoms of laryngitis; 3 had pleurisy; 4 had otitis, which in three terminated in purulent discharge of several days' duration; 1 had inflammation of the conjunctiva in both eyes; 4 have had inflammation of the posterior fauces; 2 have had swelling and inflammation of the parotid and submaxillary glands on the subsidence of the pulmonary affection; and in 3 erysipelas has followed on the subsidence of the primary attack. As in all the above there was a pulmonary affection, the result is, that 25 had bronchitis of different degrees of severity, and 15, in addition to this, had simultaneous inflammation of some other and for the most part analogous texture; while 5 had other forms of inflammation as sequelæ of the original attack. Of the entire number here referred to, 5 have died, 3 of whom, however, I saw only at a very advanced period of the disease, and therefore cannot speak of its early stage; 1 was a case in which erysipelas supervened upon laryngitis, and scarcely, I think, to be called a fatal case of "influenza;" the other 4 were cases of bronchitis, attacking persons who had been previously subject to pulmonary affections, and in whom the disease ended in suffocating effusion into the air tubes.

The general symptoms were, at the onset, chilliness, (in one amounting to violent rigor), severe headache, great lassitude and depression, cough, with hurried respiration and feeling of distress, referred to the chest generally, with much pain, (as if the parts had been bruised,) extending along the diaphragmatic margin of the ribs, aggravated by coughing or deep inspiration. The cough was at first dry, but after a few days became loose, in favourable cases, and afterwards accompanied by free mucous expectoration. The crepito-mucous râle was for the most part pretty general in both lungs, and a graver ronchus in the larger tubes; while, in not a few cases, a kind of tremor or vibration was felt, by merely laying the hand flat upon the chest, over the situations of the larger bronchi. The pulse was in general considerably increased in frequency, but (unless in the cases in which pleurisy was combined) was soft and compressible. There was heat of skin, but this diminished as the disease advanced, even in those cases which were running an unfavourable course.

In some of the published opinions of this epidemic, it has been argued that it was not essentially of inflammatory nature, because the patients did not bear bleeding well; but this I apprehend to be very frequently the case in bronchitis, as it also is occasionally in other inflammations—such as various forms of erysipelas. The disease in the present instance, as in bronchitis generally, has been by far most severe on those advanced in life, and it is familiar to all, that in them inflammation of the passages very rarely assumes the plastic form which it presents in early life. The principal source of danger, if I may so express myself, consists not so much in the activity of the inflammation as in one of its effects—namely, the increased secretion into the minute bronchi, by which the air is prevented from coming into contact with the pulmonary vesicles, so that the arterialization of the blood is arrested. Many of the patients whom I have seen, had more or less of a leaden tint, and all the four who died were deeply tinged—one of them as blue as I ever saw in cholera.

Of the four fatal cases alluded to, I had only an opportunity of examining two. The disease in one had lasted ten days, in the other a fortnight; in both the appearances were the same—namely, dark vascular redness of the mucous membranes, extending from the larynx to the minutest ramifications of the bronchi

which could be traced. The smaller air tubes seemed to be literally soaked with fluid, while the larger were smeared over with viscid mucus, as adhesive as bird-lime. The lungs gorged with blood. In one, old adhesions of the pleuræ; but in neither any evidence of recent pleuritic inflammation.

The general treatment consisted in confining the patient to bed, exhibiting a draught containing ʒij. of liq. acet. ammoniæ, every four or six hours, acting gently on the bowels, and promoting expectoration by means of oxymel of squill and ipecacuanha. In the great majority of cases perspiration came on within the first two days, after which the symptoms gradually, though but slowly, abated.

If the disease assumed a more inflammatory character, that is, if there was more than the average degree of fever, with hard, dry cough, calomel, with James's powder, or tartarized antimony, was prescribed, which, in the more acute cases, was pushed to the extent of twelve grains of calomel, and two of tartar emetic, in twenty-four hours. In such cases blisters were also applied to the chest. If, on the other hand, the inflammatory symptoms were less marked, or had been subdued, the expectorants were strengthened by the addition of spirit. ætheris nitrici, and compound tincture of camphor. Where the debility was great, a draught, containing f. ʒij. spirit. ætheris sulphurici, with ℥vj. of dilute sulphuric acid, sweetened with some syrup, was of service, and was afterwards followed up by some bitter tonic, particularly cinchona, as soon as the pulmonary symptoms were subdued.

Where there was much oppression of the lungs early, and before effusion had taken place into the air-passages, leeches to the sternum, followed by blistering, were efficacious. When the larynx and trachea were implicated, too, leeches were applied; but, guided by former experience, I abstained from general blood-letting in all the cases, except those in which the pleura was implicated; but even here the venesection was not well borne, producing a greater degree of subsequent debility than we are accustomed to witness from similar depletions; and in one of those, where the patient required to be bled three times to twelve ounces, although the pleuritic symptoms were thus overcome, he was seized two days after with erysipelas of the scrotum, and thighs adjacent, which speedily produced partial sloughing, and required the exhibition of bark and wine.

So, too, with regard to the affection of the throat; this has rather shown a flabby and relaxed condition of the membrane than acute inflammation. It has usually been attended with great pain in the deglutition of the saliva, while a mouthful of food could be swallowed without the same difficulty. Most relief was afforded in such cases by stimulating and astringent gargles.

In the cases where otitis took place, although the bronchial inflammation had not subsided when the former came on, yet it was no more complained of, and had disappeared when the discharge from the ear was established. Nearly the same thing was observed with respect to the inflammation of the glands about the jaw—that is, by the time they were considerably swollen, the breathing was entirely relieved.—*London Med. Gaz.*, Feb. 18, 1837.

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62. *Remarks on the Influenza* of 1837. The cases of the Epidemic may be divided into three classes, according to the aspect of the symptoms.

1. Those cases, chiefly occurring in young persons, having the features simply of mild catarrh.

2. Those assuming more the aspect of rheumatic fever, to which catarrhal symptoms are attached only in a trifling degree, occurring also chiefly in the young and middle aged.

3. That severe form, prevailing most amongst the old, and more especially those who have the chronic bronchial affection so common to elderly persons.

In the first form there is generally chilliness or rigors, succeeded by heat; pain, often severe, in the frontal sinuses and nostrils, with feeling of suffocation from swelling of the membrane lining the back part of nostrils—often with bleeding from that part. Troublesome cough, from irritation referred to the lower part of trachea; especially teazing during the night; not relieved in the usual way by expectoration. The pulse weak, not much quickened; tongue slightly furred, and generally moist.

Treatment.—By confinement to bed, or to a room of equal temperature, these

cases soon pass over. Recovery seems to be chiefly retarded by the depression so marked in this disease, together with the persisting *dry* cough.

Saline and mucilaginous medicines, as mucil. tragac., or acaciæ, mist. amygd., or oxymel, with small doses of antimony and nitrate of potass. The night cough much relieved by ten grains of pulv. ipecac. comp. at bed-time, in mucilage, with spt. æth. nitr. 3ss., or made into pills with mucilage; by which a quiet night's rest is procured with great relief. The bronchial irritation may be much mitigated by mustard poultices applied (from half an hour to two hours) to the upper part of chest. Secretion may be promoted by the following pill every four or six hours: ℞. Ext. Conii. Pil. Scillæ C. aa. gr. ii.; Pulv. Ipecac. gr. i.

Diet, arrow-root, gruel, whey, beef tea; with meat early in the convalescence.

In the second form the early symptoms are the same as in the first, but more severe: there is headache, much pain in the aponeuroses of loins, scapulæ, and limbs, often round the *margin* of chest, apparently in the tendinous structures external to the chest, sometimes extending over one side and suddenly shifting to the other; the pulse quick, and generally small and weak; the tongue furred, white and moist, often dry and yellow; trifling cough, and uneasiness in the air passages; the cerebral symptoms in some cases severe, often amounting to delirium. There is generally much depression; often syncope. The urine is small in quantity, and loaded with lithate of ammonia.

Treatment.—Saline aperients, with calomel and antimony at night. Leeches to the forehead in many cases, and to the chest, followed by blisters, when the pains about the chest are severe. Bleeding does not seem more effectual in giving relief than leeches, and is not well borne. Vinum colchici, in half-drachm doses, relieves the pains in the head and limbs; 10 grs. of Dover's powder, with nitre, at bed-time, is very useful in allaying pain and procuring rest. Where the tongue is much furred, great relief is obtained by purging the liver with calomel, followed by warm aperients, as rhubarb, magnesia, and dec. aloes, or rhubarb and tartrate of potass, or sulph. and carb. magnesiæ, with tr. card. co. As soon as the febrile symptoms have subsided, and the tongue gets clean, quinine is the best tonic. The diet should be as nourishing as the stomach and system will bear.

In both these forms the depression of strength and spirits is very remarkable—quite out of proportion to the other symptoms.

In the third form the chief danger is from the large quantity of tenacious mucus secreted by the bronchial surface; the depression of strength causing great difficulty in its expectoration. The attack frequently appears but as an aggravation of symptoms previously existing, but whose features it rapidly changes. The strength sinks; the appetite fails; the circulation becomes languid; the strength is inadequate to expel the large quantity of bronchial secretion; the lips get blue, the intestines cold, and the patient soon sinks,—often in a few hours. In less severe cases, there is a lighter shade of these symptoms; the tongue is much furred—often brown and dry.

Treatment.—Much benefit is derived from blistering the chest, which should be done early in the case, so as to *anticipate* the severe symptoms. Squills, ipecacuanha, antimony in small doses (avoding its depressing effects); and where antimony cannot be borne, the lobelia inflata (tincture) appear serviceable in clearing the bronchial tubes, in doses of 3ss. every six hours, with æther and ipecac. Where the tongue is much furred (as it is almost always), one or two doses of calomel, followed by hyd. c. creta, combined with rhubarb, or at night with Dover's powder. This form of opium appears to agree better than any other in this disease; perspiration is promoted and rest is procured, without that binding effect on the secretion which follows the other preparations of opium. Nourishment must be cautiously given from the first; such as beef-tea, jelly, yelk of egg, with warm milk, or whey; and where there is much prostration, with wine, or brandy. There is in many cases very troublesome vomiting; this is relieved by potass, soda, or ammoniæ carb.; effervescing with lemon juice. Warm milk, with soda-water added to it, is a pleasant beverage in these cases.

Amongst the young, one fatal case only occurred, in a publican of intemperate habits, and unhealthy condition.—*London Med. Gaz.* February 18, 1837.

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63. *Influenza.*—The following observations on the epidemic are extracted from an editorial article in the *Lancet* of 4th February last. "So far as enquiry has ena-

bled us to form a judgment, the disease is produced by some infectious poison, gaseous or miasmatous, suspended in the atmosphere, favoured, perhaps, in its transmission from place to place by moisture, and promoted in its reception by the respiratory apparatus, by the moisture in the air, and by the action of cold debilitating the parts to which the poison is applied. It may be said that as this infectious principle must be applied to the whole respiratory tract, it ought at once to produce general bronchitis in the individual, as well as coryza; but to this it may be answered, either that those parts which are attacked are alone so constituted as to be capable of receiving the infection, or that the poison becomes modified as it passes on; at all events the action of some such poison, whether thus received, and thence transmitted to the whole system, or received by the whole tract, and then re-acting on those points chiefly which are affected, seems to cause the production of the disease. Thus the infectious principle of measles acts only on particular parts of the system, though it is received into the system in a similar manner. With reference to the first condition it might be worth inquiring how far the increased action set up in mucous surfaces when exposed to any irritating matter, protects, as has been supposed, the constitution against its introduction. This much we certainly know, that in many cases where these symptoms of local irritation ceased, or were imperfectly developed, the constitutional irritation became much more severe.

"The approach of the disease, in what may be called its regular form, has generally been indicated by trifling cough, however little noticed, more or less uneasiness, sometimes amounting to pain in the bones, or, rather, what has been described as a sensation of bruising in the osseous system, lassitude, and slight chills. On the succeeding morning, after a restless night, severe headache, commonly referred to the situation of the frontal sinus, was complained of; frequently, however, especially in one variety, seated in the occiput. The pains in the bones had now also greatly increased; they were sometimes described as lancinating, sometimes as gnawing, and often stated to be intolerable. Sneezing, and a watery discharge from the nostrils, with running from the eyes, followed in the course of the day, accompanied by cough, which was now severe, peculiar, and spasmodic. Towards evening on this day there was commonly great prostration, at times excessive, extreme oppression and difficulty of breathing, and, invariably, rigors, often most severe; it appeared, in fact, as if slighter chills experienced on the day preceding had marked the reception of the disease, evinced by the catarrhal symptoms on the following day, the rigors indicating full constitutional affection. After continuing in this aggravated form for a day or two, seldom more, unless the patient would not confine himself to his room, or bed, the disease began gradually to decline. While at its height, in many cases, sore throat, in several deafness, and dimness of sight, generally of but one eye or ear; in some, pain over the maxillary sinus, were complained of. Soreness of the sides, and tip of the tongue, frequently, and, occasionally, apthæ were also noticed. In these cases the tongue was generally white, furred along the middle, or red, with the papillæ elevated; sometimes glazed and dry, and at other times dry, brown, and coated. There was often considerable thirst, more rarely nausea. The bowels, with very few exceptions, were more or less confined, and free from pain. The urine varied extremely, in quality and quantity, as before stated.

"The crisis was generally marked by a gentle perspiration, and, in those cases in which the urine had been scanty and high coloured, by a lateritious sediment and an increase of the quantity, all the other symptoms becoming ameliorated at the same time. Some additional complications with other states have been observed since our previous notice of the epidemic, one of these, indeed, namely, its occurrence in pregnant women, and production of miscarriage, we then omitted to mention. Of three cases where miscarriage has taken place, well-marked catarrhal symptoms had previously existed in two of them for three or four days, followed by pains in the loins, and rapid miscarriage; in fact, in both it occurred before medical assistance could be procured. In a third case, which was attributed also to a cold, miscarriage took place very early. In the fourth, notwithstanding the invasion of severe pains in the lumbar region, nausea, &c., early attention and treatment prevented a disastrous result. This case was followed by vesico-urinary catarrh, which, accompanied by scalding, was observed also in one of the first-mentioned cases. Two very severe cases, in which pneumonia supervened before medical aid was obtained, have occurred in the locality in the centre of

which we write. In one of these the side was completely dull, slight bronchial respiration and bronchophony only being audible during ordinary, and a very minute crepitus during forced, inspiration.

"We have little further to add respecting the treatment, except that in no case was bleeding found expedient. In fact, such is the *constitutio anni*, that in very few diseases does bleeding seem to be judicious, as a remedial means. Tartrate of antimony and potash have never once disappointed in the course of the epidemic, in any one of the forms it has assumed, whether complicated with erysipelas, arthritis, or bronchitis. Even in those cases where the pulse was very feeble, its employment was equally attended by advantageous results, and, far from creating depression, it acted partially as an excitant, by removing disease. The existence of bowel complaints, which were only present in three or four cases, alone contraindicates its use. In the suffocative catarrh of children, after the ineffectual trial, in one case, of the protochloride of mercury and ipecacuanha, given at first with aperients, and subsequently, when the expectoration had become profuse, and the powers of life had begun to fail, ammonia and blisters being employed with but temporary benefit, the cautious administration of tartrate of antimony was followed by complete success. In the pneumonic cases, the administration of the protochloride of mercury, in small and repeated doses, to the extent of 6, 8, and 10 grains a-day, with dry cupping over and below the scapula, was successfully employed. For the dysentery, turpentine fomentations, and the proto-chloride of mercury and muriate of morphia, have been equally useful. In the colic, aperients; in the spasmodic vomiting, draughts, composed of aromatic spirit of ammonia, rhubarb, magnesia, and liq. opii sedativ., with mustard cataplasm, removed the symptoms. Full doses of castor oil were, in some cases, serviceable aperients.

"In the pneumonic cases, hydriodate of potash appeared to complete the cure which the mercury had nearly accomplished; the hydriodate removing the soreness of the mouth, and diminishing the subsequent debility. At the comn. ncement, and at the decline, of the attack, occasional hot baths were useful. it is proper to add, that in some cases, in which we understand bleeding had been employed, the results were far from being favourable. This was particularly the case, when, misled by the urgency of the symptoms, it had been employed at the onset of the attack. Valuable assistance was derived from the use of the wine of the seeds of colchicum in the arthritic varieties, and from the sulphate of quinine in the intermittent, and in those cases of bronchitis which were attended with profuse expectoration and feeble pulse. In many cases dry cupping, directed to roomy parts, was found most decidedly beneficial; and so influential in its operation as sometimes almost to produce syncope, the pulse falling, the livid lips becoming pale, and subsequently gaining some degree of redness. Blisters, in the latter stages of the attack, were also serviceable."

CHEMISTRY AND PHARMACY.

64. *Discovery of Sulphate of Quinine in the urine.*—Piorry has remarked, that in 20 or 25 minutes after a person has taken sulphate of quinine, the urine tastes strongly bitter. He gave a quantity of urine of this kind to Vallée to analyze, who obtained from it sulphate of quinine in crystals (*Behrend's Repert.*) Landerer, apothecary at Athens, obtained a similar result from the urine of a patient affected with intermittent fever, who had taken, in some paroxysms, 40 grains and even a drachm of muriate of quinine (*Buchner's Repert.* 14, 1836.)—*British Annals of Medicine*, February 3, 1837.

65. *Crystals from the volatile tincture of Guaiacum.*—Landerer observed, in a specimen preserved for 33 years, at the bottom of the vessel, a quantity of prismatic green crystals possessing an alkaline reaction, and, when mixed with lime, disengaging ammonia. The supernatant tincture contained but little ammonia. The crystals were therefore composed of the resin of guaiacum and ammonia.—*Ibid.* from *Buchner's Repert.* vol. vi. p. 83.

66. *Method of preparing Aconitine.*—In another part of this Journal, (p. 223) we have noticed the success attendant upon the use of the aconitine in Neuralgia. Having been prevented experimenting with it ourselves, by the impossibility of procuring the article in our shops, we publish the following method of preparing

it from Turnbull's work on the medical properties of the Ranunculaceæ, in hopes that some of our apothecaries may be induced to furnish a supply of the preparation.

1. Let a quantity of the fresh root of the *Aconitum napellus* be cautiously dried, and reduced to powder, taking care not to inhale any of the fine dust. Digest one part of the powder by weight in two measures of strong alcohol, at a gentle heat for seven days, filter while hot, and reduce the fluid by slow evaporation to the consistence of an extract. The temperature by which this is effected must not be greater than barely sufficient to carry off the alcohol, otherwise the active principle will be destroyed or expelled. Liquid ammonia is then to be added to the extract, drop by drop, till, when stirred, it give out the odour of ammonia. If too much ammonia be added, the product will be decomposed. The mass now consists of impure aconitine, mixed with extractive and other matters soluble in water. The aconitine may be taken up with boiling alcohol or sulphuric ether, or the soluble matter may be removed by repeated washings with small quantities of cold water. If the latter plan be adopted, a quantity of light brown or gray powder will be left, which is to be purified by subsequent solution in alcohol. Aconitine is very powerful. Twenty drops of an alcoholic solution, in the proportion of one grain to a drachm of alcohol, being put into the mouth of a guinea pig, occasioned death in a few minutes.

2. Aconitine may be prepared in another way which yields it purer. Dissolve the alcoholic extract prepared as above, without adding ammonia, in as much cold water as will take it up, decant the solution from the insoluble part and filter it. To the filtered solution, add liquid ammonia drop by drop, as long as it occasions a precipitate. When the precipitate has subsided, draw off the supernatant liquid by a syphon. Dry the precipitate without heat, and either purify it by repeated washings with cold water, or, what is better, dissolve it in as much alcohol as will take it up, and throw the solution into cold water. A precipitate will be formed of a white colour, which is aconitine in its purest form. The product must be carefully dried.

MEDICAL STATISTICS.

67. *Statistics of Calculus in Austria.*—The following tabular views are extracted from Von Wattman's recent Treatise on Lithotrity and Lithotomy, (*Ueber die Steinzerbohrung und ihr Verhältniss zum Blasenschnitte.* Wien, 1835. 8vo.) and are founded on official documents supplied by Professor Raimann, of Vienna.

I. *Calculous Cases in the Austrian Dominions, from* 1820 *to* 1830.

Provinces.	Whole Population.	No. of Cal. Cases.
Vienna and Lower Austria, including the military,	1,206,520	" 49
On the Ems and Salzburg	835,043	" 18
Galitzia	4,316,086	" 19
Moravia	2,046,787	" 39
Bohemia	3,582,150	" 106
The Tyrol	780,399	" 11
Styria	854,720	" 10
Illyria and Maritime States	1,154,885	" 31
Venice and the Eight Provinces	2,032,339	" 278
Milan and Lombardy	2,400,000	" 794
Dalmatia	383,600	" 49
Total	19,592,529	1,449

Proportion, one case in 13,531 of the population.

II. *Cases of Lithotomy in the Surgical Clinic of Vienna, during thirty-five years.*

Age of the Patients.	No. operated on.	Deaths.
From 1 year to 10	71	7
— 11 — 20	42	3
— 21 — 30	30	9
— 31 — 40	12	3
— 41 — 50	6	3
— 51 — 60	11	6
— 61 — 68	8	3
Total	180	34

All the patients admitted, except four, were operated on. The above table gives the following results:

Proportion of deaths to the whole operations,	1	in 5¼
in children	1	$11\frac{3}{10}$
between the ages of 20 and 30,	1	$3\frac{6}{11}$
— 50 and 60,	1	$2\frac{1}{11}$

Of the thirty-four deaths, the following are given as the causes:—Gangrene of the bladder, 6; Phthisis, or hectic fever, 5; Debility, 6; Exhaustion from Suppuration, 3; Nervous shock, 3; Typhus, 6; Convulsions, 1; Suppuration of the Kidneys, 1: Cholera, 1.

III. *General Chemical Constitution of the Calculi in the Vienna Collections.*

Nature of the Calculus.	In the Patholog. Museum.	In the Univers. Museum.	In the Joseph Museum.	In V. Kern's Collection	In Watmann's Collection.	Total.
Phosphatic . . .	32	26	27	28	26	139
Oxalic acid, with phosphatic envelope	3	16	5	8	8	40
Oxalate of lime . .	4	12	3	1	7	27
Oxalic acid, with uric acid envelope . .	9	3	—	3	5	20
Uric acid	11	9	10	10	11	51
Number of patients and calculi . .	59	66	45	50	57	277

Brit. & For. Med. Review, January, 1837, from *Schmidt's Jahrbücher der Gesammten Medicin*, B. x. H. 3, No. 5, 1836.

68. *Medico-Statistical Report of the Deaf and Dumb in the Dutchy of Brunswick, in the year* 1835. By Dr. Mansfield.—(1.) The whole population of the dutchy, 253,232; the total number of deaf and dumb, 125; consequently the proportion is 1 in 2,026. (2.) Of the 125, 60 are males, and 65 females. (3.) In Prussia, the proportion of deaf and dumb to the population is 1 in 1,426. (4.) Nearly the fourth part of the whole number had one or two brothers or sisters similarly affected. (5.) For the most part, these persons belong to the middle and lower classes; their parents being generally poor. (6.) The health of these persons is in general good; those residing in the vicinity of the Harz are said to be scrofulous, and five of the whole number are idiotic. In two cases only could the deaf-dumbness be traced to distinct causes; viz. one as the consequence of fright, the other of miliary fever. (7.) Almost all the deaf-dumb in the dutchy have the benefit of education; a circumstance very creditable to the country, and which the author with a just pride, contrasts with the great neglect of the same class of persons in Austria, in which vast empire it appears that, out of 20,639 individuals labouring under this infirmity, only 400 are placed in houses of instruction, (ten in number;) all the rest being left without assistance. When it is considered that, of this number, the fifth part at least are susceptible of instruction, there is evidently here a great neglect of the duties of humanity. (8.) With the exception of those who are yet too young to work, or who are mentally incapable of gaining their livelihood, or are supported by relatives, (57 in all,) or who are in the course of instruction, (number not mentioned,) all the others are gaining their own livelihood as artisans and labourers. (9.) Dr. Mansfield calls the particular attention of teachers to the fact, that, in many cases, the inability to acquire the sound of particular letters or words depends on physical defects of the organs of speech, and not on mental incapacity. In proof of this he instances nine cases among the children at this time in the Brunswick Institution, who labour under some defect of this kind. The defects mentioned are the following:—Imperfect uvula; thick tongue, without frænum; large tongue, long and irregular uvula; tongue deficient in muscularity; tubular palate, imperfect uvula; enlarged tonsils; flat and irregular palate; general defective size of mouth, large tonsils;

imperfectly developed larynx.—*Ibid* from *Hannoversche Annalen*, B. i. H. 4. October, 1836.

MISCELLANEOUS.

69. *Morrison's Pills.*—The convictions of manslaughter of some of the vendors of Morrison's Pills, seem to have had a salutary effect in lessening the sale of this deleterious medicine. From the evidence of John King, a clerk in the medical department of the English stamp office, given in a recent trial, it appears that the duty paid by Morrison for stamps, which in 1835 was 9,381*l.* was in 1836 only 4,275*l.* The trial alluded to, took place in the Court of Common Pleas, February 11, Middlesex settings, before chief justice Tindal and a special Jury. It was brought by Morrison & Bell against the proprietors of the Weekly Dispatch newspaper, for a libel published in that paper, imputing to the plaintiffs that they were ignorant quacks, whose system was one of wholesale poisoning; and also that the principal partner in the concern had absconded from the country, in consequence of the insolvency of the establishment. The damages were laid at 1000*l.*

The jury returned a verdict for the *defendants on the first issue*, namely, that which related to the dangerous character of the medicine, but added, they thought the pills might be taken if administered with proper care and discretion. On the second issue, that relating to the solvency of the plaintiffs, they found for the plaintiffs—damages 200*l.*

The following is the result of the analysis of Morrison's Pills, No. 1 and 2, by Mr. Daniel, Professor of Chemistry at King's College:—12 pills No. 1 contained 11 1-10 grains of resin of aloes, 10 4-10 grains of cream of tartar, 4 4-10 grains of gum and other insoluble matter; 12 pills No. 2 contained 5 1-10 grains of resin of aloes, 4 1-10 grains of gamboge, 2 grains of pounded colocynth, 6 7-10 grains of cream of tartar, 4 7-10 grains of gum and insoluble matter.

The report of the trial is given in the *British Annals of Medicine* for February, 17, 1837.

70. *Respirator.*—Mr. Julius Jeffrey has invented an instrument, to which he has given this name, and the design of which is to ensure the wearer a supply of atmospheric air, of a certain temperature, under all vicissitudes, and to obviate the danger of sudden changes of either.

The Respirator consists of a packet of lattices, or small frames of silver, kept apart by other similar lattices, of a water-proof substance. These last lattices serve as imperfect conductors of heat, for keeping the silver lattices apart. The silver lattices are overlaid with gold wires on both sides. The wires on those nearest the mouth are one three-hundredth of an inch thick, and one three-hundredth of an inch apart. On the outer lattices they are about one six-hundredth of an inch thick, and one six-hundredth of an inch apart. The packet is made up of from four to ten of these lattices, carrying from eight to twenty layers of wire, with a non-conducting lattice between each skein. The packet is arched, to suit the curvature of the mouth. It is lodged in a case, which it exactly fits everywhere but behind, next the mouth. Here there is a small space behind the packet, to permit the breath to diffuse itself to every part of the back, or concave surface, of the packet, after it has passed from the mouth. The case is so formed as to collect whatever moisture is condensed from the breath, and to deposit it on a strip of sponge, fixed in the lower part of the case. It is only necessary to open the case, and remove the packet of skeins once a day, in order that the interior of the case and the sponge may be removed, and rinsed in warm water. There is another kind of instrument, which has a communication with the nostrils, as well as the mouth, to suit the convenience of persons who have not acquired the habit of breathing chiefly through the mouth.

[The utility of some such means of protecting the lungs from the action of cold is undoubted. We have long been in the habit of recommending to our patients who have delicate lungs the use, in cold weather, of a silk net placed around the neck and drawn over the mouth and nose, and have found it answer the designed object. It is cheaper and much more readily obtained than the instrument above described.—Ed.]

AMERICAN INTELLIGENCE.

Sketches of the state of the medical profession in Palestine, with notices of the principal medicinal plants and diseases of that country. By G. R. B. Horner, M. D., Surgeon U. S. N. (Extracted from a letter to the Editor.)—In compliance with the promise made in my last letter, I now send you some professional information respecting Palestine and Egypt. My observations have not been as extensive or as minute as desirable, from their having been connected with the performance of my duties aboard; and not having it in my power to control my own movements, nor to devote as much time to the acquisition of information ashore as I wished. I flatter myself, however, these observations may be found worthy of perusal by yourself and the readers of your Journal.

The state of our profession in Palestine is so bad, so poor and degraded, as to furnish little matter worthy of remark. The physicians of that country are principally Arabs, who are entirely uneducated; and whose acquirements and skill are in such poor repute even among their own countrymen, that they obtain little respect, and they are employed by few, save the poorest and lowest class, when the services of any Frank physician can be procured. At Sidon, now Seyd, the place which we first visited, and which has a population of 8000, exclusive of a garrison of 4000 Egyptian soldiers, there is no surgeon or physician deserving the name, save one, a Frenchman, belonging to a battalion.

At Baireut, a town about the same size as Sidon, with a much more populous and fertile country, the only regular physicians are Dr. Michale Rinaldi, a Neapolitan, and Dr. Gregorio Partili, a Greek, and native of Salonica, who was educated by a French physician of that town, and has practised some years at Damascus. Through the American consul, M. Chaussaeud, I became acquainted with the latter. With the former I did not meet until we went to Tripoli. To these three gentlemen I am indebted for much of my information concerning the diseases of the country, and the remedies employed by the Arab and European physicians. Besides Drs. Rinaldi and Partili, there are at Baireut a number of Arab physicians, or, I should rather say, empirics, who have in use some of our chief medicines, which they mostly obtain from Europe; such as jalap, calomel, and tartar emetic, and which they give in heroic doses. Dr. Partili told me that their common dose of jalap is from one to two drachms, and that of tartar emetic four grains. Calomel they prescribe in corresponding doses, but with regard to the dose of castor oil they are not particular, and never make it less than three ounces. While at Baireut I was frequently consulted by Franks and natives for their complaints, not only ashore, but aboard. The most interesting cases were one of partial idiotcy and hemiplegia with marasmus, brought on by onanism, and another that of an Arab, a citizen of Aleppo. The history of this last was the following: two years before, being unwell, he consulted an Arab doctor at Aleppo, who having examined him, said he had ulcers situated upon the privates, but which were visible only to himself, for the patient was unable to see them. The doctor prescribed four grains of calomel a day, and continued the treatment for two years. The consequence was, what may be easily surmised, incessant and incurable pain in his bones. Observing, while he was talking with me, that his face writhed from pain, and at the same time he put his hands to one of his legs, I examined it, and found on the skin a large node. Being young, handsome, and very genteel, and evidently a great

sufferer, my sympathy was excited to the highest degree, and I gave him whatever advice was thought best for the cure of his complaint.

Such is the want of proper medical treatment in the adjacent country, the American missionaries informed me, that in going through it, it was common for the inhabitants to run forth, stop their horses, hold out their hands for the pulse to be felt, and beg them to prescribe. All Franks, by the people of this country, are believed to possess more or less knowledge of medicine. They, therefore, do not consult physicians alone for the relief of their disorders.

Three months before our arrival at Baireut, the plague had occurred there. M. Chaussaeud states that it originated from a letter from Alexandria, Egypt. The person who received the letter, opened it without purification, and was quickly seized by the disease; but not confining himself, though buboes had formed under his arms, continued to visit his friends; they took the disease from him, and seventeen of them died. Such indignation was excited towards the receiver of the letter, who was a quarantine officer, that he would have been shot had not the disease itself cost him his life. An English apothecary settled at Baireut several years ago, and having done a large and profitable business, is now displaying his wealth, by the erection of a fine house after the European style, the only one to be seen there.

At Tripoli, which is a town containing 15,000 inhabitants, and situated in a rich and delightful country, between the most lofty part of Lebanon and the sea, there is not a single Frank or regularly educated physician, or an apothecary. All the professors of our art there, are Arabs, such as have been mentioned. If any one of our brethren at home is desirous of becoming a practitioner in the Holy Land, he could not chose a more promising situation than Tripoli, for he will have no competitors, and there is much sickness.

In Jaffa, there is only one Frank physician. He is a Neapolitan, and lately settled there; but has been a long time in the country. He is advanced in life; is a sensible, pleasant man; appears to have been well educated, and having been appointed physician of the quarantine, left Baireut and went to Jaffa. I do not know that I can more properly remark any where else than here, that quarantines have been recently established throughout the sea-port towns belonging to the Pacha of Egypt. We obtained pratique at Suda, in Candia, two days after our arrival, and were not quarantined again at any of them.

At Jaffa, being anxious to obtain some Arab medicines, I went to the shop of one of the chief apothecaries, and through the kindness of Frederico Jacomo, a Spanish friar, belonging to the Franciscan convent, Terra Santa, who spoke Arabic, and had studied medicine, purchased whatever I wanted, and learned all the properties and uses of the different articles examined. This shop was not like those of Philadelphia, decorated with marble, and having windows displaying rows of glass vases and globes, filled with gaudy coloured liquids. It was in a bazaar, and like other shops, it was open in front from the ceiling to the floor; and, not needing them, had neither doors nor windows. For closing it, were two shutters, suspended by hinges, one above, the other below. The lower formed a counter projecting into the street, and covered by open boxes of drugs and medicines. The height of the shop was about ten feet, its depth eight, and its width fifteen feet. All the medicines, save those on the counter, were on shelves, and put up in small oval wooden boxes, on the front of which were written the names of the medicines in Arabic characters. The apothecary, a large, well-dressed, fine looking old man, clothed in Turkish costume, sat cross-legged at one end of the counter, received the articles I purchased from an assistant at the other end—held the scales, weighed the medicines, and set down the prices. The following are some of the medicines I bought: Gum Arabic brought from Babylon. It is in small, hard, friable masses; is transparent; has a beautiful amber colour; little or no taste, or smell, and when broken

is as brilliant as glass. Haiarx amber, or Cassia fistula, from Abyssinia. It does not differ in appearance from that brought from the East Indies, being a black pod, about eighteen inches long, three-quarters of an inch in diameter, and containing a black, sweet, well-flavoured pulp, and many large, yellowish, hard seed. It is an ordinary purgative among the Arabs.

Lasan asfur, called lengud de paxaro, or bird's tongue, by the friar from its appearance. This is an elliptical flat seed, half an inch long, of a yellowish white colour exteriorly, and of a white colour interiorly. It is crisp, is covered by a thin cuticle formed into longitudinal folds, is slightly mucilaginous, and burns the mouth when chewed. It is given in pulmonic and rheumatic affections. Arakduhab. This is brought from Persia, is cylindrical, shaped like an ear of Indian corn, an inch and a half in length, of a dark grey colour, has an exceedingly fiery taste, an aromatic odour, and is covered by many small diamond shaped seed, set around it in a spiral manner. The apothecary said it was combined with sugar, and given for the cure of diseased eyes, ophthalmia, &c. It might be useful in amaurosis, but I think where the eyes are inflamed would do much more injury than benefit. Aoutesabel. This is a product of Arabia and is used for the prevention of plague. It is a bulbous root, five inches long, an inch in diameter, and tapers towards both ends, at one of which are several ligneous stems supported by a short trunk. This root is of a light brown colour without, and of a dull white within. It has a slightly bitter astringent taste, and an earthy unpleasant odour. Aoutkara. This is a fusiform root, with a blackish-grey wrinkled skin, it varies from three to four inches in length, and from a third to two-thirds of an inch in diameter. Its substance is white, its odour fœtid, and its taste bitterish, pungent and nauseous; chewed it is somewhat mucilaginous. This medicine is given by the Arabs for the cure of pulmonic affections. Tinfil. Small seed, about twice the size of mustard seed, having several facettes caused by pressure against one another, and remains of their peduncles. They are of a reddish-brown colour, have an aromatic odour, a hot, fiery taste, and when broken are found to consist of a very thin shell containing a white farina. They come from Persia and are said to cure nervous complaints and rheumatism. For the cure of the latter they are put into hot baths. These seeds are so fiery, that it is probable the Thompsonians would prize them very highly and rank them even with No. 6.

Having described the chief medicines bought of this Arab, I will conclude the subject of the physicians of the country. At Jerusalem, which contains 30,000 inhabitants, our profession is in as degraded a condition as in any other part of Palestine. The only physician there deserving the title, is a surgeon of Ibrahim Pacha's army, and cannot be considered as a resident. He is one of four French surgeons the Pacha has lately employed. All the physicians at Jerusalem, save him, are Arabs, and of the same kind as those already mentioned. This is to be much regretted, for many are the lives of pilgrims and travellers lost there by the want of proper medical attendance. Among the latter who have lately died there is Mr. Carnagan, a young Irishman of fine abilities, of a highly cultivated mind and great zeal, who, determining to explore the Dead sea, built a boat at Jerusalem, transported it to the former place on a camel, embarked with one attendant, an Arab, and accomplished his purpose; having made all the wished for observations. Most unfortunately the fresh water taken along was lost overboard by the stupidity of the Arab, and they both suffered so much from thirst, heat, and fatigue, that they got ashore and reached Jericho with much difficulty. Both were seized with fever; the Arab died at Jericho, Mr. Carnagan was conveyed to Jerusalem, but was so ill, and died so soon, that he was unable to communicate the result of his researches. In his death science has much to deplore. Had he lived, the scientific world might have had their curiosity respecting the Dead sea fully gratified.

The chief medicinal plants I saw, were several species of mentha, the ricinis communis, scilla marilema, melia argadarach, the datura stramonium, olive tree, cucumis agrestis and granatum. Near Tripoli I found growing abundantly the ricinis communis, melia azedarach, datura stramonium, and cucumis agrestis. At the foot of the castle overlooking the town, I met with a most extraordinary specimen of the ricinis, it being in fact entitled to the name of tree. It was evidently many years old, and proved satisfactorily that this plant is there one of perennial growth. Its leaves and fruit, however, did not correspond in size with the huge trunk, and were smaller than those found on the ordinary plant along the roads and in the gardens. The stramonium grows to great perfection. I saw some of it growing to the height of 5 or 6 feet, and have one of the fruit nearly as large again as any I have seen at home. It is found growing in sandy ditches on the road side. The fruit of the granatum was larger here than in any other part. In the town I bought one and carried it on board as a curiosity: its weight was 1lb. 10oz. avoirdupois. The most luxuriant growth of the cucumis agrestis was upon the summit of the Mount of Olives at Jerusalem, at the back of the church of Ascension. This plant grows in dense bunches, several yards around. Its fruit grows between the stem, and leaves upon an upright peduncle with a crook at the top, and hangs presenting its apex downwards, its fundus upwards. When mature, the least touch will make it fly off the peduncle and discharge all its contents, both juice and seeds, through the hole in which it was fixed. Its contents are thrown several feet obliquely upwards and high enough to strike a person's face; mine has been repeatedly struck. The cause of its flying off and squirting is the great elasticity of the parietes of the fruit, which allow at first of distension, but at length react. If a wound is made in any part, the discharge will take place there.

Of the diseases of Palestine the most prevalent are fevers, dysentery, smallpox, pulmonary affections, plague and ophthalmia. Leprosy is said to exist, and especially at Jaffa, among the poorest class, but I saw no cases of it. The most common fevers are the intermittent and continued, which last resembles the bilious remittent fever of the southern parts of the United States, being violent and fatal, particularly to strangers. At Jerusalem typhus fever is said to prevail, but it is probably nothing more than the continued illy treated. Dr. Dodge, one of the American missionaries died of it there about two years ago. Fevers are most prevalent at Tripoli, a circumstance easily accounted for, by the fact of a large stream of water running from the foot of Lebanon into the town, being dammed up almost in the midst of it, divided into numerous branches and distributed throughout the level country by ditches, for the purpose of irrigating the gardens. Here the people are not found living in cottages as at Baireut, but reside altogether in town. By far, however, the most common complaint in the Holy Land is ophthalmia; and I can never think without pain of the misery it causes to the inhabitants. Wherever I went, blindness, nebula, leucoma were before me; but far oftener at the south than at the north. At Ramla, the Aramathea of the Bible, among the first objects I beheld were three blind men talking to one another; and in riding from the house where we put up, out of the town, I counted thirty-four persons blind in one or both eyes. That one half of its population have imperfect eyes is not an extravagant calculation. The numerous instances of ophthalmia and blindness there, may be attributed to the adjacent sand wastes, the exposure of the eyes to an ardent sun, the males either wearing caps without brims, or turbans, want of medical aid, and the blowing of the sirocca. Going over the Carmel mountains we encountered this wind. So dry, hot, and full of impalpable sand was it, that though we travelled by night, many of us had our eyes inflamed by sunrise the next morning, the time at which we reached Jerusalem.

Of Egypt I have not much to say, having had my observations confined to Alexandria, from the squadron getting short of provisions and being obliged to

leave so soon as to prevent us from penetrating into the country. Alexandria being the capital, the grand naval depot, and having great commerce, has of late rapidly increased in size, and is said at this time, including soldiers and seamen, to contain a population of 100,000; of which number 5000 are Franks. Being a place of such importance, it has attracted by hopes of making fortunes, many European physicians who are in possession of all the profitable practice among both the natives and their own countrymen. Some of them are employed in the navy, others in the army of Mohamit Ali. Two have been made Beys, of whom the most distinguished, I understood, was Clot Bey, who now resides at Grand Cairo. His cures have procured him his title, and are thought wonderful. The Pacha thinks so well of European doctors, that it is said that he will employ any one who will shew a diploma. The physician of the most eminence at Alexandria is Dr. Laidlow, an Englishman, who has been living there these five years. He is most celebrated on account of his cures of plague, and has charge of a hospital established within a few years for the benefit of all indigent Franks. I formed his acquaintance, and found him a most agreeable, sensible gentleman, and as far as I can judge, an accomplished physician. He believes in the contagiousness of plague, but says it is not as contagious as is believed; that he had known forty persons to visit a patient having it without catching the disease; that he visited patients having it as he did others; felt their pulses, opened the buboes to let out the matter; had cured his servant whom he attended the whole time in his own house, and nevertheless had never had the plague. He said the average number of cases he cured was 75 per cent., but when applied to in time a still larger proportion: that lately he had had nineteen English sailors affected with it under his care and had cured all, save four of them, who were brought when in a desperate condition from the ship to the hospital. Much, however, of the success of his treatment depends on the constitution; those of a nervous temperament soon have the brain inflamed and die, while those of a phlegmatic one will recover. During last year 17,000 of the citizens of Alexandria were destroyed by it, and among them many Europeans. It is most fatal in March and April, but prevails also during the summer, and is thought always to be in existence. The great fatality of plague there he thinks owing to bad treatment, closing the house, crowding about the sick and stuffing them with food, meats, fruits, &c. for they believe if a person is sick and does not eat, he must certainly die. The great havoc committed by this fell disease has caused the formation of a medical police and the appointment of health officers, who are all Franks. As soon as a case of plague is known to exist in any house, the doors are shut, the inmates quarantined and forbid all intercourse with their neighbours or other persons; and if any of them die the body is taken out and buried in quick lime. To this last regulation the people have a strong dislike, for they entertain a great abhorrence of being thus buried, from its being thought to fulfil the worst of all curses on an Egyptian, "may your body be burnt." To conceal the deaths of their relations, some have been known to bury them beneath their houses, and others to horribly mutilate the dead bodies and throw them into the streets, that they may be thought to have died by violence, not of plague, and might not be recognised. Alexandria is not alone infested with plague, but has another pest almost as bad, the small pox, which is so constantly prevalent, that it is always a dangerous post for men-of-war to visit. The crew of this ship was infected. One of the marines on guard, and stationed on a gang-board, seeing a boat approach in which were several Egyptians having on their faces marks of recent small pox, and looking as if they just got out ordered them to keep off. They persisted in attempting to get on board, and at one time got near enough to the sentinel for him to have jumped down into the boat, but were finally driven away by him. Nine or ten days after he was seized with varioloid, remained two weeks on the sick list and returned to duty a week ago; and this

morning I am sorry to say, a seaman is taken with this disease. He will be immediately sent to the Lazaretto here and kept from all communication with the crew until perfectly well. Adopting these means we hope to have no more cases; but should others occur they will be likewise sent to the Lazaretto. The whole crew, amounting to nearly 500 men, save a few, were vaccinated two or three days after the ship left the United States. While at Alexandria the ship took in a supply of Nile water which is sold there, and since it was served out has had her crew affected with diarrhœa and dysentery. No deaths have occurred from either complaint.

We are now in quarantine, have been for eight days, and expect to be for some time to come.

Port Mahon, U. S. Frigate United States, Nov. 4th, 1836.

Case of Encysted Dropsy. By Isaac G. Porter, M. D., of New London. The following example of this disease occurred in a male child, who died at the age of three years and four months. The individual was in all respects healthy, until he was thirteen months old. He then had (Oct. 1834) dysentery, from which he apparently recovered. In January following, he was feverish, the bowels being costive and tumid. As the child was teething the symptoms were ascribed to the irritation consequent on that process, and he was treated accordingly. The health and spirits were soon regained, although the abdomen continued to increase in size, giving at times obscure fluctuation, but usually being tense and hard. By some medical men it was supposed to be an ordinary case of ascites, by others, an enlargement of the mesenteric glands, and by others, still, from the size, and tortuous form of the abdominal veins, fungoid disease of some of the viscera. The case was watched with much interest, from month to month, and for some weeks prior to death fluctuation became strikingly apparent. The child, in the mean time evinced very few signs of disease, had a good appetite, regular functions of the bowels, and amused himself in going about the house. Still his respiration was short, and he was easily fatigued, as well as much incommoded by the immense bulk of his abdomen. He passed large quantities of limpid urine, of a light colour, and for two months previous to his death was feeble and drooping. Four days prior to that event he had cough and vomiting, and sank under the ordinary symptoms of bronchitis.

Autopsy.—The external aspect of the limbs, round and full, exhibiting little emaciation. The same true of the face, one cheek having the florid hue of health. The abdomen enormously distended; the ribs so much pressed out by the accumulation within, that on surveying the trunk from above it appears globular, the diameter from the top of the sternum being scarcely greater than from side to side. The circumference of the abdomen was found to be 2 feet 11 inches; the whole length of the child 2 feet 7 inches.

On plunging the scalpel into the abdomen, a large quantity of light-yellow, transparent serum escaped. Continuing the incision, the parietes of an immense sac were exposed, which filled, entirely, the right portion of the abdominal cavity. The liver, stomach, and spleen, were situated in the left hypochondrium, the former stretching a little into the epigastric region. The intestines and omentum, which were much glued together, were pressed into the left iliac region. All the viscera, especially the liver and lungs, were remarkably small, being much diminished by interstitial absorption. The cordiform tendon of the diaphragm was so much elevated by pressure as to be nearly on a line with the top of the sternum.

The sac, which has been alluded to, was of a white, fibrous texture, and was from one to two lines in thickness. The external surface was adherent to a large portion of the diaphragm, and the serous membrane lining the abdominal cavity. On its inner surface were portions of semi-calcareous matter,

white, and of an aborescent appearance, and quite hard and brittle. They were scattered in various parts, were rather smaller than a crow quill, and three or four inches in length. Within this large sac were others; two, which appeared to arise from it, being thick and fibrous in their texture, the size of grape shot, and containing serum; the others, two in number, being larger, and each containing a pint of serum. Of the latter the coats were exceedingly thin, and resembled concrete albumen. Were they not true hydatids? From all these cysts collectively were drawn ten quarts of serum, by measure.

The foregoing case has points of interest, among which may be noticed:

1st. The little disturbance of the general health, manifested in this, as in most cases of encysted disease, which continued until a short period prior to death.

2nd. The transposition of the liver, stomach, &c. The child being originally well-formed externally, it has been concluded that the disease must have originated beneath, and to the right of the liver, and that pressure alone caused its removal.

3d. The existence of so large a cyst in a child. Inflammation probably existing in the serous membrane of the abdomen, there was an exudation of organizable matter, fibrinous or fibro-albuminous in its nature, together with some effusion of serum. The former surrounding the latter, gradually became more developed and organized, increasing in thickness, and forming a true cyst. These adventitious productions have been shown by Bicha to be analogous in their structure and functions to the serous membranes. Chronic inflammation existing in this species of sac, there was a continued effusion of serum from its parietes, which ultimately resulted in death.

New London, March 17, 1837.

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Case of Imperforate Hymen. By Charles Baldwin, M. D., of Union, Monroe county, Va.—In the summer of 1836, I was called in great haste to visit Miss J. K. in consultation with my young friend Dr. Ward Cook. From her friends I received the following history of the case. That she was then in her sixteenth year of age, and had never menstruated. That she had every appearance about twelve months previous of having arrived at the period of puberty. That about that time nature had evidently commenced her efforts to establish the menstrual flux: that regularly once a month there was slight indisposition which continued five or six days: that for the last three or four months these attacks had increased in violence, being attended with bearing down pain, and pain in the hips and loins. Yet there was not the slightest appearance of menstrual discharge. During the intervals her health was perfectly good. All the common remedies usually resorted to in such cases, proving of no avail, Dr. Cook was called on. He, believing it to be a case of tardy appearance of the menses had treated it accordingly, till the increased violence of the symptoms awoke his suspicions as to the cause, when he proposed an examination, which being reluctantly submitted to, confirmed his suspicions. He then immediately requested her friends to summon my attendance. On my arrival I found her suffering intensely with bearing down pain, and pain in the hips and loins, accompanied with a frequent desire to pass urine, and with tenesmus. I proceeded to make an examination and discovered a tumour resembling the head of a fœtus, presenting at the vulva; but on a careful examination perceived that the tumour was soft and yielding, and tender to the touch, and could detect no entrance into the vagina. Placing the hand upon the hypogastric region, I could distinctly discover, through the abdominal parietes, the uterus distended and reaching nearly to the umbilicus. Having no doubt that it was a case of imperforate hymen, I proceeded to operate, by penetrating the tumour (near the middle) with a sharp pointed bistoury, and making an incision downwards. A dark tar-like fluid immediately gushed forth, which occasioned instantaneous relief from her sufferings: another

incision was then made upwards, which completed the division of the membrane. About five pints of fluid were discharged, which resembled tar in colour and consistence, and was unattended with fetor. A tent was introduced into the vagina to prevent the closure of the hymen, and there was a slight discharge of purulent matter for three or four weeks. At the next monthly period the menstrual flux made its appearance, and has continued to recur with great regularity ever since.

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Case of Melanosis.—By Isaac Parrish, M. D. (Extracted from an essay on that disease, *Read before the Philadelphia Medical Society.*)—Rachel Yorke, a widow aged 43 years, of dark complexion and slender frame, applied for admission into Wills' Hospital, January 7th, 1837, in consequence of a fungous tumour on the ball of the great toe.

She stated that the tumour had been evident for the last three years, and had varied but little in size during this period. In the spot from which it originated, there had always been a purple mark or mole about the size of a mulberry, which was supposed to have been congenital. On her admission the tumour was about half the size of a pigeon's egg, of a soft and fleshy texture, the apex larger than the base, and the whole exterior presenting a red, and tolerably smooth ulcerated surface. She has suffered but little pain in the part, has frequent attacks of hemorrhage from the ulcerated surface. After using much exercise, the tumour generally increases in size, and she feels pain in the groin attended with swelling in the lymphatic glands. There has never been any purulent or ichorous discharge from the surface of the sore, and seldom any inflammation around it, although she stands and walks upon the foot a great deal. On the upper surface of the toe, about half an inch from the nail, there was a black tubercle, slightly elevated above the skin, and about the size of a shilling. This black spot made its appearance soon after the sprouting out of the ulcer, and had increased but little since that time. The nail of the toe was perfect. She stated that various applications had been made to the ulcer, by some of which its size would be reduced for a short time, but no permanent improvement had ever occurred. When the ulcer was lessened the black spot upon the upper surface would become larger and more elevated, and would resume its usual aspect when the ulcer regained its ordinary size. The patient stated that her health had suffered but little from this disease—during the whole period she had made her living by washing clothes and other laborious work. She has occasionally been troubled with chills and fevers, which would confine her for a few days. When these attacks occurred the tumour was always aggravated, and the lymphatic glands would be tender and inflamed. During an attack last summer, the inflammation run so high, that an abscess formed above the groin and discharged a considerable quantity of pus.

Under these circumstances she was admitted with a view of trying the effect of rest, position, &c. and of amputating the toe if they had no affect.

She was directed to keep the limb elevated, and to apply mucilage of slippery elm, and a poultice of the ground elm at night. She took alterative and aperient medicines, and was kept upon a light nutritious diet.

In a few days there was a slight amendment in the appearance of the toe, which continued, however, but for a short period. Other applications were resorted to without effect. At the end of two weeks I left the city for a few days, and placed her under the care of my friend Dr. Littell. During my absence she was seized with a severe chill, followed by high fever, attended with pain and inflammation in the groin.

Purgatives were directed by Dr. Littell, with leeches to the groin. On my return the violent symptoms had subsided, but she still had fever, loss of appetite, thirst, &c.; her strength was failing, and she was rapidly emaciating.

She was discharged at her own request February 14th, and was attended at her daughter's by Dr. Spackman, who had previously been her physician. She continued to grow worse, hectic fever fairly set in, and she died on the 21st of March. A few days previous to her death I was requested to visit her. She was much emaciated, the expression of her countenance anxious, pulse rapid and feeble, intense thirst, difficulty of respiration, particularly in the recumbent posture; this symptom was so striking that she reminded me of a patient labouring under asthma. The tumour on the toe was slightly increased in size—she complained of pain in the knee and groin. The knee joint was much swollen, and was evidently distended with fluid. The glands of the groin were much enlarged, and an abscess was forming on the upper and inner portion of the thigh.

Post-mortem examination, in the presence of Dr. Littell and two medical students. The toe was first removed, and carefully examined, the diseased mass was entirely confined to the cellular and adipose tissue—the phalanges and joints immediately under the diseased mass were not altered in appearance. The internal structure of the tumour was not examined as I wished to preserve a cast of the preparation.

The usual incisions necessary for exposing the cavities were next made. The divided integuments exhibited nothing unusual—the melanotic deposit was not discovered in the cellular membrane in any other situation than that described, although our examination to this point was not as accurate or general as would have been desirable.

On raising the sternum, the lungs on both sides were found to be thickly studded with melanose masses—the right lung was hepatized throughout a large portion of its structure, the left was equally full of the melanotic deposit, but appeared healthy in other respects—there was no adhesion of the surfaces of the pleura on either side, and no extraordinary effusion in either cavity. The pleura was free from the melanotic deposit.—Heart and its membranes sound.

In the abdomen we discovered a considerable number of small melanose bodies scattered over the surface of the peritoneum, varying in size from a pin's head to that of a cherry. The melanose matter was in a fluid state, and contained in a transparent cyst. The bodies were attached by a thin neck to the peritoneum, and were perfectly black. The liver, spleen, and kidnies presented no unusnal appearance.

The lymphatic glands of the groin were considerably enlarged and altered in their structure. Several of them were the size of a hickory nut, and on cutting into them, they were found to contain a portion of the melanotic deposit, confined in cells or cavities of various dimensions: by pressing the gland between the fingers, the black matter was forced out of the cells, having the appearance of tar in colour and consistence. A large abscess occupied the groin, from which nearly half a pint of thin, ill-conditioned pus, with dark particles floating in it was discharged.

The cavity of the knee joint was now exposed, and a large quantity of sero purulent matter evacuated.

The brain was not examined.

Remarks.—The history of the preceding case might lead us to infer that the primary disease was melanosis of the cellular and adipose tissue of the toe. The fungous tumour being the effect of the ulceration of the melanose tumour. The almost simultaneous appearance of the black tubercle on the upper surface of the toe, and of the fungous tumour, would certainly tend to favour the idea of their identity, or at least of these being the product of the same kind of diseased action. This view of the case is confirmed by the opinion of my friend Dr. Pepper, who saw a case somewhat similar to the preceding in the Hospital of M. Biett in Paris. In this case a number of black tumours appeared on the surface of the body in different situations, resembling exactly the tumour on the upper

surface of the toe in the case now under consideration. In process of time the skin covering these tumours would break, and a fungous ulcer sprout out, having the same external characters as that just described. This patient became paralytic on one side, rendering it probable that a melanose tumour had formed in one of the hemispheres of the brain, and was in this condition when Dr. Pepper left Paris.

In the Medico-Chirurgical Review for October 1836, I find an account of a case of fungoid tumour succeeded by melanosis, by Dr. Norris of Stonebridge. In this case the tumour was situated between the umbilicus and pubis, and had originated from a congenital mole—it was half the size of a hen's egg, of a deep brown colour, ulcerated on its surface, and discharged a fetid ichorous fluid. In a few months after the appearance of the tumour, distinct nodules sprung up around, some with slender necks, others with broader bases, the glands in the groin were swollen and slightly tender to the touch. At first the general health of the patient was not impaired, or were the pursuits of business interfered with. The disease, however, in the course of time, became more general over the surface, bluish spots appeared on the back, sides, and face. Loss of appetite gradually came on, followed by dyspnœa, cough, and fever—dropsy finally supervened and the patient died.

On examination immense numbers of melanose tumours were found scattered over the stomach, intestines, mesentery and omentum. The mesenteric glands, the pancreas, liver, and kidnies were affected, especially the liver. The lungs were thickly mottled throughout the greater part of their texture. The heart was literally encrusted with melanose spots, both externally and internally.—The dura mater was studded with them, the brain itself was healthy.

From the examination of this case, Dr. Morris had reason to think that melanosis is of a kindred genus with fungoid tumour, being but a variety of fungoid disease. This opinion is endorsed by Dr. Johnson, the learned Editor of the Review, who thinks also that neither melanosis nor fungous hematodes are new diseases, but that they were known to the ancients under the general name of cancer.

Analysis of Solar Light. Within a few days past, notices have been circulated in the public prints, that *Melloni* had succeeded in depriving the sun's rays of all their heat, by transmitting them through certain media, consisting of water and coloured glasses; and also, that Mrs. Somerville, by means of a screen of pale green glass, had abstracted from them that property by which they darken the chloride of silver, and effect chemical changes.

Whilst these results have been obtained in Europe, experiments of a like character have been carried on in Virginia, the event of which is of far more interest to chemists, the effects being equally as certain, and the means being in the hands of every experimenter. Dr. Draper, Professor of Chemistry in Hampden Sidney College, writes to us that he has found during the last year, that there are several solutions, which are transparent as respects the sun's light, yet opaque to his calorific ray, and others which are transparent both to his light and heat, but opaque to the chemical ray; for it does not follow, that a body transparent to light, should be transparent to heat or to the chemical rays. A solution of sulphate of copper and ammonia, and a decoction of tannin, are both transparent to the light of the sun, yet they are nearly opaque to his heat. Nor is this condition of things at all regulated by colour—the first mentioned of these substances is blue; the second brown; and the sulphocyanate of iron, which is red; the chloride of chromium, which is green; the muriate of cobalt, which is pink; and the bichromate of potassa, which is orange; though they are all when in solution, transparent to the rays of light, yet are either opaque or only translucent to the rays of heat. Dr. D. has found more recently, that solutions which are perfectly colourless and clear as water, exercise very different functions on the rays

of heat; and, though in an examination of upward of two hundred and seventy such solutions, none have yet been found which are absolutely opaque to the rays of heat, there are some which approach that condition. Vegetable solutions exercise a similar influence. Turnsole, dissolved in water, when the the thickness is about a quarter of an inch, permits only about four rays of heat, out of every 100 which fall upon it, to pass through—this is a blue solution. A decoction of Brazil wood, which is red; a decoction of logwood in alum, which is purple; and tincture of turmeric, which is yellow, have the same effect.

A solution of the chromate of potassa is nearly opaque to the chemical ray, but is transparent to the ray of light; and more than semitransparent to the ray of heat. The bichromate of potassa seems to be absolutely opaque, for a beam of light, three inches in diameter, converged to a focus by a convex lens, after traversing such a solution one-fourth of an inch thick, could not blacken chloride of silver in an exposure of fifteen minutes. All the vegetable solutions above named are likewise nearly opaque. But a solution of the sulphate of copper and ammonia, when in a mass thick enough to stop all the rays of light, is freely permeated by the chemical rays. It is curious that several *yellow* metallic solutions, as the chloride of gold, the chloride of platinum, the permuriate of iron, and the hydrosulphate of lime, act about as powerfully as the chromate of potassa, but this peculiar tint is not always effectual in producing this result, for the yellow oil of turpentine, and the yellow ferro-hydrocyanate of potassa, il to prevent the blackening of the chloride.

These experiments therefore decide the question of the separate existence of calorific and chemical rays in solar light; they also enable the philosopher to insolate each ingredient and operate upon it by itself, a matter of the utmost importance in investigations of the properties of light.

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Rhinoplastic Operation.—It affords us much gratification to announce the successful performance by our young friend Dr. J. Mason Warren of Boston, of an operation for the restoration of a lost nose. We consider this operation so creditable to the operator, and indeed to American Surgery, that we shall give the details of the case in full, nearly in the words of the author, as recorded in the Boston Medical and Surgical Journal, March 8, 1837. Dr. J. Mason Warren is the son of Professor John Warren of Harvard University, one of the first surgeons in this country, and his son has, in the operation under notice, shown himself worthy of his sire.

The subject of this case, was a young man æt. 28, who three years ago last spring, while playing very roughly with one of his companions, received a violent blow on the nose, which dislocated the cartilage, driving it at the same time over to the left side. Some inflammation came on in the nose at the time of the accident, which very shortly subsided; and as he was out of town, and at a distance from medical advice, nothing was done to replace the cartilage, which remained in the situation into which it had been driven by the blow.

In the following spring, while pursuing his ordinary occupations, a small red spot appeared on the right cheek just below the eye; this very soon increased in size, the inflammation gradually spread, first attacking the lip, thence extending to the nose, which became red, swollen, and finally ulcerated; and, in the course of eighteen months the whole nose, cartilages, septum, bones, &c. were successively attacked, and finally completely destroyed. The ulceration had also extended to the cheek of the opposite side. Subsequently to this, cicatrization gradually took place, leaving the patient in the state in which I saw him, six months after his recovery from the disease.

At this period, having accidentally come across a description of the Taliacotian operation in an old magazine, he applied to know whether anything of a similar kind could be done to remedy his frightful deformity. The following was his state as he appeared on the first examination.

The nose, as described above, had entirely disappeared, leaving in the place

it originally occupied an opening about an inch in diameter, bordered by a firm cicatrice; the septum of the nostrils was destroyed, and the two nasal cavities thus thrown into one; externally a small cicatrix descended from the lower and left edge of this opening to the angle of the mouth. In the course of the disease the four front teeth had been lost, and this, together with the absorption of the alveolar processes, had caused a sinking of the upper lip, which had fallen an inch below the level of the lower one. An opening also existed between the lip and upper jaw, through which a probe might be passed from the mouth into the nasal cavity. The sense of smell was quite lost, and he was subject to an occasional running of the tears over the face, arising undoubtedly from the too sudden contact of the air with the lachrymal ducts.

A thorough examination of his case having been made, and finding there was no positive obstacle against the possibility of the success of an operation, the difficulties of such an operation as would be required were distinctly stated to him, the improbability of its succeeding so as to restore the organ in such a manner that the deformity should not be known, that the new nose might become very much flattened, and perhaps on the appearance of cold weather gangrene might take place, and finally, that even his life might be endangered by it. I felt it my duty to state the case plainly, having seen all these accidents occur from the operation, and death in two cases being the consequence, from severe erysipelatous inflammation of the scalp. Notwithstanding all these objections, he said that he was ready to incur any risk which would give him the least chance of having the deformity under which he laboured obviated, as life in his present state was hardly desirable.

Having determined to submit himself to an operation, it was though expedient to delay it a few weeks, in order to watch the case a little, and prepare him for it by a course of diet and regimen.

At the end of six weeks his health had materially improved, and as he still persisted in the determination of having an operation performed, preparations were made to do it as soon as possible, as on account of the approach of cold weather, no time was to be spared. At this period he was seen by my friend Dr. Peace, of Philadelphia, who was present with me at one or two operations of the kind practised by Dieffenbach in Paris, and he declared, as his opinion, that the appearance of the patient offered every chance of success. The favourable circumstances were—the healthy state of the integuments surrounding the opening of the nasal fossa, the great height of the forehead, the whiteness and delicacy of the skin, and, added to this, the good state of his health. All the preparations having been made, the operation was performed on the seventh of September.

A piece of pasteboard, cut in the shape of the letter V, that is, of a triangular form, and with a projection from its base, corresponding to the columna of the nose, was placed upon the forehead, and a trace made around it with the nitrate of silver; this being used in preference to ink, as recommended by Lisfranc, in order that it might not be liable to become effaced by the blood. A trace was also made around the opening of the nasal fossa, at the points where it would be necessary to remove the integuments for planting the new skin taken from the forehead. This was done the night previous, in order to prevent any undue delay on the day of the operation.

All unnecessary articles of clothing being removed, the patient was placed on a table in a recumbent position, his face towards the window, and the operator behind so as to have the full command of the head. The traces made by the nitrate of silver were about two-thirds of an inch apart between the eyebrows, each side of the triangular portion of the skin was three inches and a quarter in length, with a base of three and a half inches, and the projection for the columna of the nose, which was to be taken entirely from the scalp, previously shaved, was an inch and a half long and two-thirds of an inch wide.

The head being firmly supported by two assistants, the incision was commenced between the eyebrows, and the flap of skin dissected up so as entirely to isolate it from the skin of the forehead, except where, for the purpose of nutrition, it was left adherent at the root of the nose. The incision on the left side between the eyebrows was extended a little farther down than on the right, the better to facilitate the twisting of the flap. This incision included the skin, subcutaneous cellular tissue, and a portion of the occipito-frontalis muscle, care being taken not to raise the periosteum, from fear of necrosis.

The flap thus dissected and twisted round to the left side, was carefully wrapped in a compress of linen cloth, and before the operation was proceeded farther in, attention was given to diminishing the large wound made in the scalp. Little hemorrhage had taken place, and the temporal arteries which had been cut, very soon retracted and ceased bleeding. The angles of the wound were first brought together by the twisted suture, two pins being employed on either side. Its edges between the eyebrows were also approximated in a similar manner; by this means the wound in the forehead was diminished at once to less than half its original size; it was still farther reduced by the use of a few strips of adhesive plaister, and a little scraped lint filled up the remainder of the wound. Some lint spread with cerate was spread over the whole surface, a pledget, and the whole secured by a bandage round the head.

The next object was to fix the borrowed skin in its place. In order to do this, it was necessary to freshen the borders around the opening of the nasal fossa, the traces of which, as stated above, had been previously made with nitrate of silver. For this purpose a short narrow knife, somewhat similar to a cataract knife, was used, and a strip of integument a third of an inch in breadth, removed, including all that portion which had been at all indurated during the cicatrization of the ulcerations. The knife was also passed between the lip and the upper jaw, in which existed, as before stated, an opening large enough to pass a probe, and the adhesions between the two, for the space of an inch, entirely cut away. This was done for the double purpose of giving the columna of the nose a more deep and firm adhesion, and, in the inflammation which would subsequently ensue, to close up the unnatural communication between the mouth and nasal cavity.

The flap was now brought down into its place, its angles a little rounded with the scissors, the better to simulate the alæ of the nose, and the whole secured in its place by pins and points of the interrupted suture. From that portion of the skin which was to form the columna of the nose, the epidermic side was pared a little, so that it might form an adhesion not only underneath to the jaw, but on its sides to the quadrangular wound made for it in the upper lip.

A little scraped lint was now placed under the ends of the pins, and a strip of oiled lint introduced into each nostril to prevent adhesion; another strip was placed upon the nose to preserve its temperature. The dressings were secured by a band of adhesive plaister fixed to the forehead above, and partially divided in the middle, so that it might descend on each side of the nose to the lip.

During the whole of this long and painful operation the patient kept up his courage, and not a cry was uttered, nor the least struggle made that could at all impede the motions of the operator. Not much blood was lost, and his strength was so little exhausted that he was able to run up stairs to his chamber. He was ordered to go to bed immediately, to keep perfectly quiet, and a watcher left with him, who had directions, in case of his falling asleep, to prevent him from either rolling over on his side, or raising his hand to the nose so as to derange the dressings; also to wake him immediately should he breathe through the nose. To have arrow-root or gruel and lemonade, for nourishment.

On visiting him in the afternoon he was found comfortable; the new nose was warm, and had bled a little from the edges which formed the nostrils, both showing the circulation was not at all impeded.

Sept. 10th. Passed a good night, slept well, pulse seventy-nine, complains of no pain, the nose of about the natural temperature. The gentleman who watched with him thinks that the lint on the right side of the nose was occasionally raised a little during expiration, when the patient slept soundly; he awoke him once or twice on this account. A purgative was ordered of the sol. sulph. magnes. and liquid farinaceous diet. A piece of cork was confined between the teeth, so as to keep the mouth open, it being hoped that this might prevent him from closing his lips during sleep and breathing through the nose.

11th. Quite as well, passed a quiet night, has a good appetite, pulse eighty. Watcher says that he occasionally made a motion to raise his hand to the nose, but, as if instinctively aware of the impropriety of it, withdrew it again without touching the dressings. The introduction of the cork into the mouth had entirely effected its object, by preventing the passage of air through the nose.

12th. The first dressing took place four days after the operation, and the following was found to be the state of the parts. The dressings on the forehead,

after being well soaked were first removed. The angles of the wound were found to have united throughout, so that two of the pins were at once dispensed with. Union had also taken place in its lower part, just above and between the eyebrows; the remainder of the wound, that is, its central part, in which union by the first intention could not take place, was suppurating well, and filled with healthy granulations.

The nose was next attended to. Upon the lint being removed, which had become very much hardened and caked in by the coagulated blood, it was found that entire union had taken place on both sides. The alæ of the nose and lower edges could not easily be seen without making use of too much violence in removing the dressings, which at present was not thought necessary. The columna was curved inwards, and the sutures concealed. The nose was of the natural colour and temperature, and the circulation through it seemed uninterrupted.

Two strips of lint dipped in oil were laid over the cicatrix on each side of the nose, and no other dressings used. The patient was allowed to sit up a little, and to take any article of food of the liquid kind he might fancy.

On the 13th he was quite as well, with the exception of a little œdema of the upper eyelids, arising, undoubtedly, from the pressure of the bandages and other dressings on the forehead. One of the pins was removed from the forehead on the 13th, and another, the only remaining one, on the following day. The dossils of lint which had been placed in the nostrils still remained there, firmly caked in by the drying of the pus, blood, &c. These were not removed until the 19th, when their places were supplied by two pieces of hollow sound. Some difficulty was found in the introduction of the tube into the right nostril, which had become partially filled with granulations.

On the 14th a quantity of hair began to appear on that portion of the skin forming the columna of the nose, which, as will be remembered, was taken from the scalp; this hair, from time to time, required to be removed with the scissors. He was put upon a nourishing diet, with the caution to use the jaws as little as possible. He stated that occasionally, when he swallowed, he had a sensation as though he would "swallow his nose."

15th. The remaining pins were removed from the side of the nose, and the two sutures which confined the alæ; and on the 17th, ten days after the operation, the two ligatures, which confined the columna in its place, were also removed. At this period, the following was the state of the parts. The wound in the forehead, from the adhesion by the first intention which had taken place, and subsequent contraction, had diminished to a third its original size, and the small triangular space which remained, together with that portion of the scalp from which the columna of the nose had been taken, was filled with healthy granulations. From the wound to the root of the nose was a lineal cicatrix two inches in length, and continuous with the cicatrix on the left side. Adhesion of the integuments had taken place on both sides of the nose; at the right alæ, however, the union was not quite so perfect as at the left; that is to say, the whole thickness of the skin did not appear to have united. To assist the union, the skin of the face which lay under it was slightly scarified with the point of a lancet.

The columna of the nose was a little curved backward, and its edges had retracted inwards upon themselves. The inside of the nose was suppurating well, and at its upper part adhesion seemed to have taken place between the two bleeding surfaces which had been opposed to each other. The tip of the nose was well defined, and its edges were curved inwards so as well to simulate the natural appearance of the alæ; and just above the alæ, apparently from atmospheric pressure, a depression was taking place, forming their superior boundary. This was assisted by the patient making an occasional pressure with his fingers at these points. He feels well, has a good appetite, and sits up all day. He breathes freely through the tubes placed in the nostrils, which require to be daily removed in order to clear out any obstructions which may collect in them.

At the end of a month the wound in the forehead had contracted to about a quarter of its original size. Adhesion of the nose was perfect at all its points. The openings of the nostrils were regularly rounded, and simulated well the natural appearance. The tip of the nose is well preserved, and a regular curve takes place from its root to the end of the organ.

At the end of six weeks he was able to go out and walk about during the

evening, but as the weather became cold he was advised to confine himself to the house, as cold evidently had a very great effect in retarding the cicatrization of the wound in the forehead.

At the end of two months it was thought time to proceed to the second operation, which was required to remove the twist existing at the root of the nose. It will be easily conceived, that underneath the pedicle which connected the nose with the forehead, a small portion of sound skin existed, and that of course no adhesion had taken place between this portion and the pedicle lying over it. The method usually adopted by operators has been to cut the pedicle, after sufficient union of the nose has taken place below to justify the separation of it from its source of nutrition, and to fix it down at the root of the nose, in a transverse incision made for it at that point.

To this method there are some serious objections. First, the danger of inflammation in separating the pedicle; second, of sloughing of the organ on the vessels being cut which have hitherto supplied it with blood; and lastly, the very perceptible transverse cicatrix left after the operation. The method resorted to in the present case is liable to none of these objections, except, perhaps, the first one, in which the danger is much diminished.

This operation was as follows. An incision was made, commencing at the internal angle of the eye, and extending to that part of the base of the nose where adhesion had not been able to take place; a corresponding incision was also practised on the pedicle. The skin being well dissected up from its adhesion, a small portion of integument was removed from the upper angle of the wound, where it had become wrinkled from the twist in the pedicle. The edges were brought together by three points of the interrupted suture. The same operation was to be performed at a future day on the other side, where, however, the opening was of about half the size, and not so perceptible. Union took place, throughout, by the first intention. Some trouble was experienced, however, by the formation of a small abscess in the new cicatrix, which suppurated and discharged itself.

Four months after the operation, the cicatrization had become complete at all points. He now declares himself entirely well, no secretion takes place from the nostrils, and on looking into those cavities a new skin is found to line them throughout. The nose itself has contracted gradually, so that by the first contraction of the integuments, and the subsequent contraction from suppuration, it has decreased to almost two thirds the size of the flap which was taken from the forehead. Contraction also seems to be going on in its longitudinal axis, so that the distance between the tip of the nose and the mouth, daily increases. This will be much more perceptible, and the whole physiognomy of the nose much improved, when the four front teeth, which have been lost, are replaced. This will bring out the under lip, and at the same time raise the tip of the nose. The cicatrix in the forehead has become very small, and is gradually assuming the colour of the surrounding integuments. The scalp from which the columna was taken is lost in the hair. The nose is quite firm, of a good form, and the cicatrix on each side hardly perceptible; at the root of the nose on the left side, and at that portion which formed the pedicle, a small fissure still remains, which is for the present concealed by a strip of court plaister.

The health of the patient has never been better, his sense of smell is returning, and the tears no longer run over the face, and he, as well as his friends, congratulate themselves both on the moral and physical effects of the operation. He is now able to make his appearance during the daytime, which he has not done before during the last two years, and no person would observe anything remarkable in the nose, without a minute examination, when it would be difficult to explain the remarkable anatomical changes which have taken place.

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Lithotripsy.—Professor N. R. Smith writes us that he has successfully performed this operation in six cases, and promises an account of them for our next No.

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Medical College of the State of South Carolina.—The number of medical students in this institution the past session was 106.

UNIVERSITY OF PENNSYLVANIA.

MEDICAL DEPARTMENT.

At a Public Commencement, held March 31, 1837, *in the Hall of the Musical Fund Society, the Degree of Doctor of Medicine was conferred by the Rev. John Ludlow, D. D., Provost, on the following Gentlemen, Students of this Institution.*

A Charge to the Graduates was then delivered, by Hugh L. Hodge, M. D., Professor of Obstetrics.

NAMES.	RESIDENCE.	SUBJECT OF ESSAY.
Abbott, Samuel M.	New York,	Puerperal Peritonitis.
Albertson, Edmund	Indiana,	Autumnal Fever.
Allen, Stephen D.	New York,	Physiological Relations of Mind.
Allison, Joseph J.	Pennsylvania,	Certain Pulsations in Reptiles, &c.
Anderson, John C.	South Carolina,	Bilious Fever.
Anderson, Joseph M.	Tennessee,	Cholera Asphyxia.
Bagley, Robert S.	Virginia,	Cholera Infantum.
Bailey, Daniel R.	Maine,	Spinal Irritation.
Bailey, John H.	Virginia,	Dysentery.
Baldwin, William .	Alabama,	Icterus.
Bass, Isham E.	Virginia,	Cholera Infantum.
Bauduy, Peter John	Delaware,	Idiopathic and Traumatic Tetanus.
Berkeley, Carter N.	Virginia,	Fever peculiar to the Blacks of the South.
Bicknell, Rufus	Connecticut,	Influence of the Mind in causing and curing Diseases.
Blunt, Benjamin B.	Virginia,	Irritation.
Brady, Thomas	Philadelphia,	Conception.
Brewer, John M.	Pennsylvania,	Fever.
Brinker, George M.	Virginia,	Gonorrhœa.
Brown, Granville L.	Virginia,	Bilious Fever.
Brown, Thomas	North Carolina,	Congestive Bilious Fever.
Buffington, Lee W.	Pennsylvania,	Blood-letting.
Burnley, William R.	Virginia,	Malaria.
Casey, William B.	New York,	Idiosyncrasy.
Chew, Philemon	Mississippi,	Hæmorrhois.
Chisholm, James G.	Alabama,	Reproduction.
Clinton, Thomas G.	Virginia,	Laryngitis.
Clymer, Meredith	Pennsylvania,	Lateral Curvature in the Female.
Connell, Alfred B.	Alabama,	Enteritis.
Corbit, James	Delaware,	Icterus.
Crowe, Robert Fulton	Nova Scotia,	Asphyxia.
Cunnington, William P.	England,	Physiology and Phenomena of the Muscular System.
Daniel, John H.	Virginia,	Syphilis.
Dashiell, Richard R.	Illinois,	Peculiarities of Animal and Vegetable Life.
Daveis, Gilman	Maine,	Dietetics.
Dickeson, Thomas P.	New Jersey,	Eupatorium Perfoliatum.
Dillon, Alexander S.	Virgina,	Gonorrhœa.
Downing, Arthur W.	Virginia,	Scarlatina.
Earle, Pliny	Massachusetts,	Insanity.
Edgar, Samuel D.	Tennessee,	Diagnosis.
Edwards, Albert S.	Virginia,	Acute Laryngitis.
Edwards, William H.	Tennessee,	Pathology of Miasmatic Fever.
Farish, James C.	Nova Scotia,	Morbid Anatomy of the Lungs.
Fell, Townsend	Pennsylvania,	Influence of the Mind over Disease.
Field, Cridland C.	Pennsylvania,	Cholera Infantum.
Fondey, John	New York,	Jaundice.
Frink, Lorenzo	North Carolina,	Bilious Remittent Fever.
Funsten, Oliver R.	Virginia,	Angina Pectoris.
Gibson, George	South Carolina,	Delirium Tremens.
Gilliam, Joseph S.	Virginia,	Intermittent Fever.

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COLLABORATORS.

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EDWARD H. BARTON, M. D. *Professor of the Theory and Practice of Medicine and Clinical Practice in the Medical College of Louisiana.*

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W. W. GERHARD, M. D. *one of the Physicians to the Philadelphia Hospital, Blockley.*

WILLIAM GIBSON, M. D. *Professor of Surgery in the University of Pennsylvania.*

R. E. GRIFFITH, M. D. *late Professor of Materia Medica, Therapeutics, Hygiène and Medical Jurisprudence in the University of Maryland.*

THOMAS HARRIS, *Surgeon U. S. Navy, and one of the Surgeons of the Pennsylvania Hospital.*

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TO READERS AND CORRESPONDENTS.

Dr. N. R. Smith's cases of Lithotripsy were received too late for the present number.

The following works have been received:—

A Discourse on some of the Diseases of the Knee-joint; delivered before the Massachusetts Medical Society, at their annual meeting, May 31, 1837. By George Hayward, M. D., Professor of the Principles of Surgery and of Clinical Surgery in Harvard University, and Surgeon to the Massachusetts General Hospital. Boston: 1837. (From the author.)

The Human Brain: its configuration, structure, developement, and physiology; illustrated by references to the nervous system in the lower orders of animals. By Samuel Solly, Lecturer on Anatomy and Physiology in St. Thomas's Hospital, &c.; with 12 plates. London: Longman & Co., 1836. (From the author.)

Sur l'Influence des Saisons sur la mortalité a differens ages. Par M. le Docteur H. C. Lombard. (From Professor Dieffenbach.)

De l'Influence des Professions sur la durée de la vie. Par le Dr. H. C. Lombard. (From Professor Dieffenbach.)

Recherches Historique et Médicale sur l'origine, la nature, et le traitement de la Syphilis. Par M. Devergie, Ainé. Suivie du Rapport a l'Académie de Médecine. Par M. Cullerier. (From Dr. Fricke.)

Notice sur le traitement simple, antiphlogistique et rational, des Maladies Vénériennes. Par M. Devergie, Ainé. Paris: 1835. (From Dr. Fricke.)

Du chlore employé comme remède contre la Phthisie Pulmonaire. Par J. N. Gannal. Paris: 1832. (From Dr. Oppenheim.)

S. A. W. Steinie Tabulæ Anatomiæ; Fasciculi Primi pars prior et posterior; Regio colli intermedia; Regio colli lateralis, et Regio infraclavicularis. Haunia: 1831–3. (From Prof. Otto, of Copenhagen.)

Observations on the Anatomy and Physiology of the Capillary Blood-vessels. By Andrew Alexander. (From the author.)

A Treatise on the Malformation, Injuries and Diseases of the Rectum and Anus; illustrated with plates. By George Bushe, M. D., formerly Professor of Anatomy, Physiology, &c. New York: French & Alard, 1837. (From the publishers.)

Directions for the establishment and government of Lunatic Asylums. Translated from the French of Brierre De Boismont, M. D., by E. Quincy Sewell, M. D. (From Dr. T. R. Beck.)

Surgical Observations on Tumours; with Cases and Operations. By John C. Warren, M. D., Professor of Anatomy in Harvard University, and Surgeon to the Massachusetts General Hospital. Boston: 1837. (From the author.)

A Narrative of the Dissolution of the Medical Faculty of Transylvania University. By Lunsford P. Yandell. Nashville: 1837. (From the author.)

An Essay on the Mineral Waters of Carlsbad, for Physicians and Patients. By Chevalier John de Carro, M. D., of the Faculties of Edinburgh, Vienna and Prague, and Physician at Carlsbad during the season. With observations on the Microscopic Animalcules about the Hot Springs of Carlsbad, by Mr. A. J. C.

Corda, of Prague; and a Flora of Carlsbad, by Professor C. B. Presl, of Prague. Prague: 1835. (From the author.)

Proceedings of the President and Fellows of the Connecticut Medical Society, in Convention, May, 1837; with a list of the members of the Society. New Haven: 1837. (From the Society.)

An Address to the Annual Convention of the Medical Society of Connecticut, convened at Hartford, May 10th, 1837. By Thomas Miner, M. D., President of the Society. New Haven: 1837.

A Report of the New Haven County Medical Society on the expediency of repealing that section of the Medical Laws of this State which excludes irregular practitioners from the benefits of law in the collection of fees. New Haven: 1837. (From Dr. H. Bonson.)

A Catalogue of the Officers and Students in the Medical and Law Departments of Cincinnati College—First session, 1835-6. To which is appended, a list of the Graduates at the first Medical Commencement; with a Report from the Trustees to the Corporators, and the names of the Board of Trustees for 1836-7. Cincinnati: 1836. (From Professor Drake.)

The British and Foreign Medical Review, for January and April, 1836. (In exchange.)

London Medical Gazette, for February, March and April, 1837. (In exchange.)

The Dublin Journal of Medical Science, for May, 1837. (In exchange.)

Zeitschrift für die gesammte Medicin mit besonderer Rücksicht auf Hospital praxis und ausländische Literatur, for August, September, October, November and December, 1836. (In exchange.)

Bibliothek for Læger, No. 4, 1834, and Nos. 1, 2 and 3, 1835. (In exchange.)

The Transylvania Journal of Medicine and the Associate Sciences, new series, for January, February, March, April, May and June, 1837. (In exchange.)

The Boston Medical and Surgical Journal, for May, June and July, 1847. (In exchange.)

The Southern Medical and Surgical Journal, for April and May, 1837. (In exchange.)

The Western Journal of the Medical and Physical Sciences, for April, 1837. (In exchange.)

The Select Medical Library and Eclectic Journal of Medicine, for May, June and July, 1837. (In exchange.)

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ERRATTA.

Page 85,	bottom line,	for	"dissertations,"	read	"*dissections.*"
87,	line 22	from top,	for	"arms,"	"	"*arm.*"
89,	" 14	"	"	"a,"	"	"*common.*"
95,	" 11	"	"	"originated,"	"	"*originates.*"
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Fig. 2.

Fig. 1.

THE

AMERICAN JOURNAL

OF THE

MEDICAL SCIENCES.

ARTICLE I. *On the Typhus Fever which occurred at Philadelphia in the spring and summer of* 1836. By W. W. GERHARD, M. D., one of the Physicians of the Philadelphia Hospital, Blockley. [Part second.]

The cases published in the first part of this memoir (see this Journal for February, 1837) are sufficient to illustrate the leading facts of the pathological anatomy of this form of fever.

The glands of Peyer were found not merely free from the peculiar lesion occurring in dothinenteritis or typhoid fever, but these follicles and the rest of the intestine were more healthy in the petechial fever than in the majority of other diseases. We are the more certain of the state of these glands because our attention was closely directed to this subject, and we had previously made most numerous examinations of the glands in typhoid fever and in other diseases; we could therefore pronounce with certainty as to their actual condition. The mesenteric glands were always either normal or very little injected; and the spleen was altered only in one third of the whole number of patients.

The lesions of other organs were as various as they are in most acute diseases, and evidently depended in a great degree upon the season, or upon the accidental circumstances in which the patient was placed. Thus, we had several cases of pneumonia in the months of March and April, while the lesions of the intestine were remarkably insignificant. But in the warmer season of June, July and

August, diarrhœa was frequent, and was accompanied not by a lesion of the glands of Peyer, but by softening or other affections of the mucous coat of the colon.

The pathological anatomy of a disease will usually afford us useful data which may point out the analogies which unite it with other maladies. Now the absence of a permanent characteristic lesion, at least in the solids of the body, is one of the most remarkable peculiarities of the exanthemata. In all these diseases there is no constant lesion, with the exception of the eruption itself. The analogy is not limited to the pathological anatomy, as the subsequent part of this memoir will prove; and without wishing to lay too much stress upon the resemblances which may exist in some of the symptoms of a disease which presents a strong analogy, we cannot pass them by without due attention. As far, therefore, as the pathological anatomy will direct us, we are constrained to class typhus fever amongst the exanthemata. We shall presently examine the relations which the symptoms may bear to those of other diseases.

In the account which we shall give of the symptoms of the epidemic of typhus, it is not our intention to subject them all to a rigid numerical analysis. We shall describe the symptoms, but enumerate those only which are sufficiently important to render the diagnosis between this fever and dothinenteritis precise. It should, however, be remembered that the symptoms which are stated without an exact arithmetical estimate of their relative frequency, were all carefully noted and examined attentively, one by one. There can, therefore, be little danger of any inaccuracy in the estimate given of their relative frequency, and still less of incorrectness in their description.

Exterior. An eruption of a peculiar character appeared on the skin of 32 out of 36 whites, in whom it was noted. Of the four cases in which it was not visible, one died upon the seventh day of the disease, and the others presented slight symptoms of fever, which disappeared in the course of four or five days. It was also visible, though less distinctly, in mulattoes; and we may infer that the colour of the skin alone prevented its developement in the negroes. It consisted of petechiæ, which in not more than six cases resembled the rose-coloured spots of dothinenteritis. The petechiæ assumed the form of small reddish or purple spots from the breadth of one line, or even the eighth of an inch, down to that of a minute point. They were not elevated above the surface of the skin, and were without the regular round or oval shape of the rose-coloured spots. The colour of the petechiæ at first was of a lighter red, and could with difficulty be distinguished from the spots of typhoid fever; but on the second

or third day they assumed the dull red or purple colour of the eruption proper to the typhus; sometimes they were nearly black.

The eruption of petechiæ must therefore be regarded as a characteristic symptom, for it was present in nearly every case in which the symptom was sought for. The eruption is indeed quite as constant as that of measles or small pox; for those cases in which it could not be detected either died before the day on which it usually appeared, or were ephemeral, abortive cases of the disease, which ceased before passing through its regular periods. The petechiæ appeared from the sixth to the eighth day, after the beginning of the symptoms, and disappeared from the fourteenth to the twentieth day. But the time of their disappearance varied much, and the gradual diminution of their colour rendered it difficult for us to indicate its precise date. The eruption would occasionally fade without entirely disappearing, and again resume its former colour. This sudden and unexpected fading of the eruption coincided with a depression of strength, and was often of fatal prognosis. After death, a slight bluish ecchymosis, easily traced in the thickness of the true skin, indicated the place of the larger petechiæ, while the smaller were no longer visible. The regular progress of the eruption proves the close analogy which exists between typhus and some of the eruptive diseases, especially scarlatina and measles.

There is a marked difference between the petechial eruption and the rose-coloured spots of typhoid fever. In typhoid fever the eruption is rare, very seldom extending beyond the abdomen and thorax; whereas in the epidemic typhus, the eruption is almost always general, extending to the limbs as well as the trunk. Whether the two eruptions are occasionally found together in the same individual, I cannot state positively. Besides, in typhoid fevers the reddish or rosy hue of the spots remains, and they are scarcely ever of the dull livid or purple tint of the petechiæ of typhus. It is certain that in a few cases the larger petechiæ resembled rose-coloured spots so closely, that without much care they might have been confounded with them.

The eruption of sudamina, or minute transparent vesicles about the groins and neck was also observed, but more rarely than the petechiæ. It was not so frequent as in typhoid fever.

The skin in whites presented other changes than those which have been mentioned. A constant symptom observed in every case was a dull, livid, red hue of the countenance, extending nearly over its whole surface; sometimes this colour approached a purple. It coincided with a strong dark red suffusion of the capillary vessels of the conjunctiva which appeared at the same time with it, but usually dis-

appeared at an earlier stage than the injection of the eyes. The conjunctiva never presented the bright red tinge or the brilliant aspect observed in acute inflammatory diseases of the brain, or of the eye itself. The expression was dull, and the blood-vessels had a dark red tinge, instead of their usual scarlet hue. The suffusion of the face and eyes was so constant and so well marked in the fully formed disease, that it served almost as a pathognomonic sign. It was generally most evident with patients of a full habit of body. Towards the close of the disease, the reddish colour was gradually changed into a dull ashen tint, which remained until the entire recovery of the patient.

Emaciation did not take place in the early stages, it was indeed not very visible until the fever began to decline. If the other symptoms continued without increased severity, the wasting away of the flesh under such circumstances was generally a favourable sign, and indicated approaching convalescence. Stout, corpulent persons generally suffered more than those who were of a spare habit of body, and more frequently perished; and in a large majority of our dissections we therefore found the fat extremely abundant.

The *strength* of the patients failed in a great degree, nearly from the beginning. Thus, the man whose case is alluded to in the first part of this article, evidently lost his strength from the very moment of the attack, which seemed to arise from strict contagion. Other patients were able to walk about, but none were able to attend to their usual business except with extreme difficulty, and only in the earliest stage of the disease. But this prostration of the early stage was never so intense as that which comes on at a later period, when the fever begins to subside. The secondary prostration is of a more severe character, and is distinguished from the temporary loss of strength occurring at the beginning of the disease, by the coldness of the extremities, and the weak, fluttering pulse which usually attend it. In itself, the loss of strength at this stage indicates the subsidence of the fever, and is not a sign of bad import; but it must be watched, and if it advances too far, it often proves destructive to the patient. This second period of prostration, was in general easily combated by appropriate treatment.

The *cerebral symptoms* were certainly amongst the most characteristic of the typhus fever. They appeared very early in the disease and continued with greater or less intensity throughout its whole course. We shall examine them separately.

Stupor. About the same time with the prostration of strength, there was more or less stupor observed. It was perceptible in our

patients from the moment when they complained of their first symptoms. It was frequently slight, but could always be recognised by a little attention, and gradually increased until the middle period of the disease, when it was most intense; nor did it cease entirely until the strength of the patient returned. There were usually some traces of it during the convalescence. The stupor rarely passed into complete coma, except in fatal cases; hence coma was always a most unfavourable sign. Still, to a moderate extent, it was occasionally witnessed without being followed by the same danger as in ordinary diseases.

Vertigo and confusion of sight was also one of the first symptoms: thus in most cases in which they were noted, they occurred on the first day, and in the others very near the beginning of the disease. The same symptom exists in the dothinenteritis, but in a less constant and less severe degree. In the typhus fever it appears so early, and is so well marked, as to impress a peculiar appearance upon the physiognomy of the patient.

Tinnitus aurium, generally combined with partial deafness, is also very constant. Sometimes it is confined to one ear, but usually extends to both. The deafness is much more intense than in typhoid fever, but it may still be dissipated for a time by addressing the patient in a loud tone of voice. Some ringing of the ears and a slight vertigo frequently remain after the other symptoms of the disease are completely removed.

The *sleep* was in the early stages uniformly disturbed, although the patient lay almost constantly in a state of somnolence. Still it was not a sound sleep, nor did this take place until the patient either recovered or sank into a profound state of stupor. As in dothinenteritis there was somnolence, but nearly complete absence of refreshing sleep.

The *intelligence* was impaired from the earliest stages. At first the alteration was so slight as to escape the attention of an inexperienced observer, but when the fever had fully set in there was at least confusion of the intellect, and nearly always delirium. This last symptom was absent only in a few cases. The delirium was not noisy, except in about one patient out of twenty. In the immense majority of patients it was dull, muttering and incoherent. The delirium became more tranquil, and was exchanged for ordinary stupor or coma, when the fever was at its height. It did not cease entirely until the complete establishment of convalescence. Even after recovery the intellect of the patient was more enfeebled than it is in ordinary diseases, and regained its usual strength but slowly.

The *nervous symptoms,* which are usually considered by the French

writers as belonging to the ataxic form of dothinenteritis, were present in a greater or less degree in every patient who survived the first two or three days after the attack. Those who perished thus early, died of the mere depression and the accompanying stupor; but from the third to the seventh day, various disorders of the nervous functions manifested themselves. These symptoms were the following:—The *sensibility* of the skin was universally augmented when the stupor was not so great as to render the patient insensible, or nearly so, to all external impressions. The tenderness, upon pressure, was so much increased as to induce us to refer the external soreness at the epigastrium, when pressure was made upon the abdomen, to an affection of the internal organs; but on more careful examination the sensibility was nearly equally increased in every part of the body, and was evidently external. The cutaneous tenderness was preceded by muscular soreness, which lessened as the skin became more sensitive.

In no case did we detect paralysis previously to the approach of coma; if it seemed to exist, we soon ascertained that it was only apparent, and caused by the extreme prostration.

Subsultus of the tendons at the wrist was observed in three cases out of four; in the more severe cases the subsultus extended to the muscles of the legs and face. When it appeared at the face, the corners of the mouth were drawn rapidly to one side or the other, giving a singular expression to the countenance. In the worst cases the subsultus extended to nearly all the muscles of the body, keeping the patient in a constant state of tremor, not unlike a severe chill. Such cases were not necessarily fatal, although the sign was of bad import, but of vastly less importance than in typhoid fever. The spasmodic contractions of the muscles were not permanent; hence there was no constant rigidity observed in any case. The smaller muscles were much more affected than the larger ones.

Abdominal symptoms.—In the ordinary typhoid fever of France, the symptoms connected with the alimentary canal are amongst the earliest and most prominent in the disease. The diarrhœa is constant, and occurs amongst the first symptoms; its intensity bears a tolerably exact, but not an invariable, relation to the extent of alteration in the intestinal follicles. As the lesion of the follicles is so constantly present, it is considered by most authors as the cause of the diarrhœa, although this symptom partly depends upon the irritation of the large intestine. In the epidemic of typhus, the intestines were found remarkably free from disease of any kind, except towards its conclusion, when diarrhœa became a frequent symptom. It did not, however, appear until the middle of summer, when the weather became hot and

dysentery was very prevalent. From the epidemic of dysentery which then existed, and the absence of any distinct and constant anatomical lesion, we were led to infer that the diarrhœa was an accidental, instead of a permanent symptom. In short, that it was by no means characteristic of the fever, but that it might appear as a symptom, just as it often does in pneumonia and other febrile diseases. Patients never seemed to perish from the severity of the diarrhœa, which was in general quickly and readily checked.

The *appetite* was generally destroyed in the advanced stages of the disease, and in whites it disappeared from the beginning. If they took food, it was mechanically, because it was offered to them, and evidently not from a desire of eating. The blacks, on the other hand, did not lose their appetite so universally; some asked for solid food, and ate the usual quantity of it. As the symptoms of anorexia was then far from constant, it is obviously less important than it is in typhoid fever, where it constitutes one of the earliest and most important phenomena. Nausea or vomiting was extremely rare, so that I scarcely find either of these symptoms noted in a single case. The thirst was great; it was intense in bad cases, when the patients retained sufficient consciousness to desire drink, and only lost by the supervention of entire coma. In convalescence it gradually ceased.

The *conformation of the abdomen* presented every possible variety. In the greater number, it was slightly tympanitic, but in many patients it was either retracted, or altogether of the natural form. The degree of sensibility of the abdomen was generally very doubtful, as the extreme tenderness of the skin gave rise to so much inconvenience that the patient confounded the pain which was seated in the viscera with that which was confined to their cutaneous covering.

The *urine* was examined very attentively, and was remarkable merely for its extraordinary freedom from brick-red deposit, or the changes so frequently observed during the course of fever.

The *thoracic symptoms* were of two kinds; those which were almost essential to the disease and rarely absent, and others which were accidental and frequently wanting during its whole course. In the earliest stage of this disease, although the respiration was usually remarkably vesicular in the whole anterior part of the chest, it was feeble and imperfect at the posterior part. This feebleness was accompanied by a dull sound on percussion, and was shown by our dissections to depend upon the engorgement of the lungs, which appeared very early in the disease; it was frequently combined with a subcrepitant or mucous rhonchus. The latter symptom was by no means constant, and was always vastly more frequent in the earlier cases

which occurred in the winter than in those which were admitted in the summer, towards the close of the epidemic. The engorgement ceased at the same period that the dark, livid, red tinge of the face disappeared, and was apparently owing to similar causes. The sibilant rhonchus which is usually present in dothinenteritis was rare in the typhus. Pneumonia was the most frequent accidental lesion, more frequent in winter than summer, and differed from the ordinary pneumonia merely in the greater abundance of loose mucous rhonchus and the slight developement of bronchial respiration, and of fine crepitas; it was also rarely attended with pain. In many cases there was no pneumonia, although the bronchial tubes were evidently inflamed, and the respiration offered the characteristic rhonchi of bronchitis. This last affection was most prevalent in the colder weather, when epidemic catarrh chanced to prevail. It was the converse of the dysentery which affected the patients attacked during the warm weather. During the prevalence of influenza, the bronchitis sometimes appeared as the first symptom, and rendered the diagnosis for a time extremely obscure. Nor did it become clear, until the cerebral symptoms were developed, and the stupor and injected eye showed that the disease was of a more serious character.

Phthisis, in one case, began during the course of the fever, and rapidly ran through its stages; but it was much less frequent after typhus than dothinenteritis. In the case alluded to, the patient was a young man of slender frame, and probably already bore the seeds of the tubercular disease. When phthisis existed previously to the typhus, the influence of the latter upon the course of the former disease, was extremely doubtful, unless the case had been already advanced. A few tuberculous patients sank under typhus in a day or two after the attack; but in general they seemed more exempt from it than other individuals, as was proved by the small number of tuberculous subjects found amongst those dead of the fever, (not exceeding one in ten,) and by the comparative exemption of our consumptive patients from the effects of the contagion. Although the fever patients were placed in the same ward with those affected with phthisis, the instances in which it appeared amongst them were extremely few in number. This comparative exemption was rendered the more evident, as a considerable number of patients affected with diseases of the brain or the heart became victims of the disease. We even believed that the diseases of the brain (as paralysis from previous hæmorrhage) evidently favoured the developement of typhus.

The action of the *heart* was remarkably feeble, although the extent in which its shock was felt did not seem less great than in health. This

diminished action of the heart is mentioned by many writers on typhoid fever, and is very nearly a constant symptom. It was of course greatest when the pulsation at the wrist was feeble, and easily compressed. In patients already exhausted by a previous disease, the feebleness of the heart and the pulse was extreme from the earliest period of the disease, and sometimes constituted the most prominent symptom. These cases were generally fatal.

The *pulse* was usually more frequent than in typhoid fever. Of thirty cases which terminated in recovery, taken at hazard from the whole mass of observations, the pulse ranged from 70 to 140 in the minute. The pulse was always noted in the morning, and occasionally in the evening, so that the average was a little lower than if it had been always counted several times in a day. Of these patients the maximum frequency of the pulse was less than 100 in the minute in four cases, from 100 to 110 in six cases, 110 to 120 in eleven, and 120 and upwards in nine.

Of ten cases taken also without selection and terminating fatally, the pulse varied from 68 to 150. But one patient, however, presented a pulse less frequent than 90 in the minute; and that patient, whose pulse was at 68, died two or three days after the attack, before the fever was completely developed. That rapid course occurred in one already exhausted by protracted chronic disease. The maximum frequency was less than 100 in one patient, from 110 to 120 in another; but in the eight others, that is, four-fifths of the whole number, it was above 120. We may therefore consider a pulse of more than 120 in the morning as an unfavourable sign, though of course not necessarily of fatal import.

The evening exacerbation was well marked, and coincided with increased heat of skin. The pulse was sometimes slow: when the skin was cool and the patient extremely exhausted, this slowness indicated a depressed circulation, and was usually a fatal sign. But in general the circulation was equable and the pulse frequent. The fever was distinctly continued, but with an evening exacerbation. In a large majority of our patients the pulse was very easily compressed, and in most cases it was decidedly feeble, at least in the advanced stages at which our early cases were admitted. In some patients it was full, but soft and compressible from the beginning. In a few, where some local inflammation was present, the pulse approached in character that of ordinary inflammatory diseases. The peculiar undulation in the motion of the artery, which is so frequent in typhoid fever, was rare in the typhus. When the fever abated the pulse sank very rapidly, and during the state of collapse attending

the beginning of convalescence, remained extremely feeble. When death approached it was also feeble, but it did not sink so suddenly or so rapidly.

The *temperature* of the body was elevated above the natural standard, as in other febrile diseases; still it offered some peculiarities which were more marked in this fever than in others of analogous appearance. Instead of the warm but frequently moist surface of the body attendant upon dothinenteritis, we observed a dry skin, which gave to the hand the peculiar pungent sensation frequently alluded to by writers, and termed "calor mordicans." This pungent heat was so remarkable, that the resident physicians and others would frequently diagnosticate the disease from this symptom only. There was occasionally perspiration, but this was rare, and never abundant, until convalescence approached. The heat of the skin declined towards the termination of the disease; and instead of subsiding merely to the natural standard, it evidently sank below it. This coolness of the surface coincided with the feebleness of the pulse, and required a supporting treatment.

There was another symptom closely connected with the skin. It was the peculiar *odour* from the body of the patients. This was pungent, ammoniacal, and offensive in the most severe cases; especially in fat, plethoric individuals: in some cases its smell resembled that of putrid animal matter, and remained so a few days before death. The patients who exhaled the odour in the strongest degree were observed to communicate the disease by direct contagion more quickly than others. In the cases of several of the nurses, there could be no doubt of the direct transmission of the disease from the person of these offensive patients. The bodies of these individuals putrefied very rapidly after death, but before putrefaction was completely established the odour was rather less pungent than it was during life. Cases of this kind are to be classed amongst those which procured for these forms of fever the appellation of putrid.

The *blood* drawn from patients affected with typhus fever has always attracted much attention. Even in dothinenteritis, it is more altered from its natural appearance than it is in most diseases; but in the petechial typhus, the change of aspect is still greater. We examined it in various stages of the disease, except those only in which the prostration was so considerable as to render blood-letting obviously improper. At a very early period it was dark, without the buffy coat, and offered a large, but soft and dark coloured, coagulum. At a more advanced stage, it presented in some patients the dissolved appearance described by various authors as characteristic of the typhus

NAMES.	RESIDENCE.	SUBJECT OF ESSAY.
Pollard, George W.	Virginia,	Revulsives.
Pope, John H.	Georgia,	Purgative Remedies.
Rennolds, Birkitt G.	Virginia,	Modus Operandi of Medicines.
Reynolds, James	Alabama,	Fractures.
Ricaud, Lawrence M.	Maryland,	Pneumonia.
Ritchie, Robert R.	Virginia,	Contractions after Burns.
Ryan, Bernard	Louisiana,	Chronic Gastritis.
Saltmarsh, Seth	Pennsylvania,	Pericarditis.
Satterfield, James L.	North Carolina,	Remittent fever.
Saunders, Henry	Georgia,	Febris Autumnalis.
Shelby, John L.	Georgia,	Autumnal Fevers of Georgia.
Sinker, Seaman D.	South Carolina,	Spinal Irritation.
Smith, Charles D.	New York,	Calculi of the Bladder.
Smith, Henry H.	Pennsylvania,	Experiments on Spinal Marrow and Nerves.
Smith, James B.	Georgia,	Bilious Diseases.
Smith, William B.	Virginia,	Generation.
Stewart, Ferdinand C.	Virginia,	Causes of Cardiac Sounds.
Stewart, Joseph D.	Pennsylvania,	Infantile Convulsions.
Stillé, Benjamin Jr.	Pennsylvania,	Physiology of Digestion.
Swaby, Thomas H.	Pennsylvania,	Secale Cornutum.
Tait, Charles William	Alabama,	Revulsion.
Tenney, Isaac P.	Dis. of Columbia,	Animal Temperature.
Thomas, Joseph	Pennsylvania,	The Pulse.
Thomason, Joshua A.	Alabama,	Bilious Remittent Fever.
Thompson, Joseph H.	New Jersey,	Vegetable Materia Medica of Salem County, New Jersey.
Thornton, George W.	Virginia,	Superfœtation.
Thornton, Rootes B.	Virginia,	Puerperal Fever.
Thornton, William H.	Georgia,	Poisoning with Opium.
Thorp, Joseph B. J. L.	Georgia,	Urethritis.
Trudeau, James	Louisiana,	Apoplexy.
Tucker, David H.	Virginia,	Hemorrhoids.
Tufts, Johnson B.	Georgia,	Constipation.
Vaughan, Egbert G.	Virginia,	Variola Vaccina.
Vaughan, Isaac P.	Virginia,	Apoplexy.
Wagener, Jacob B.	Pennsylvania,	Chronic Diarrhœa.
Weatherby, Joseph C.	New Jersey,	Cholera Morbus.
Weidman, John A.	Pennsylvania,	Lyssa.
Wharton, Richard G.	Virginia,	Fever.
White, John F.	Philadelphia,	Emphysema.
Willis, Thomas F.	Georgia,	Antimonii et Potassæ Tartras.
Wilson, Goodridge A.	Virginia,	Capillary System.
Wilson, Joseph Jr.	Pennsylvania,	Intermittent Fever.
Winter, George R.	Pennsylvania,	Menstruation.
Wister, Jones	Pennsylvania,	Gout.
Wright, Edward L.	Virginia,	Rubeola.
Young, Benjamin F.	Tennessee,	Hernia.——154.

At a Public Commencement held in July 1836, the following gentlemen received the Degree of Doctor of Medicine.

NAMES.	RESIDENCE.	SUBJECT OF ESSAY.
Gholson, Robert A.	Virginia,	Acute Dysentery.
Hilliard, John T.	North Carolina,	Acute Dysentery.
Hooke, William B.	Mississippi,	Cystitis.
Jeffreys, Jacob H.	North Carolina,	Cynanche Trachealis.
Johnson, Daniel E.	North Carolina,	Acute Gastritis.
Pettit, John	Pennsylvania,	Erysipelas.
Pope, Cullen J.	Georgia,	Scarlatina.
Rankin, Archibald	Pennsylvania,	Uterine Hemorrhage.——8.

W. E. HORNER, *Dean.*

Philadelphia, March 31, 1837.